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ABSTRACT

This study was designed to determine whether there are disparities in sex knowledge between hearing college freshmen at the University of Maryland (N=75) and Loyola College in Baltimore (N=128) and deaf college freshmen at Gallaudet University (N=38). The Sex Knowledge Inventory was administered along with the Knowledge portion of the Sex Knowledge and Attitude Test. The Sex Knowledge Inventory measured knowledge of such topics as masturbation, homosexuality, reproduction, birth control, anatomy and physiology, sexual intercourse, and AIDS (Acquired Immune Deficiency Syndrome). Analysis revealed that the Sex Knowledge Inventory is a valid instrument for assessing sex knowledge in both hearing and deaf populations. Data collected demonstrated that deaf college freshmen lag behind hearing college freshmen in nearly every aspect of sex knowledge examined. Appendixes describe subject recruitment and provide copies of instruments used and project approvals. (Contains approximately 130 references.) (JDD)

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A Comparative Study of Sex Knowledge Among Hearing and Deaf College Freshmen

Daniel B. Swartz

May, 1992

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Abstract

The purpose of this research was to obtain empirical evidence regarding the knowledge of sex information among samples of hearing and deaf college freshmen. The study was designed to determine whether there are disparities in sex knowledge between hearing college freshmen at the University of Maryland (n=75) and Loyola College in Baltimore (n=128), a total hearing population tested of N=203, and deaf college freshmen at Gallaudet University (n=38). The Sex Knowledge Inventory (SKI), an instrument previously developed and tested by the researcher to measure sex information including: masturbation, homosexuality, reproduction, birth control, anatomy and physiology, sexual intercourse, and AIDS, was used to assess sex knowledge. Additionally, the Sex Knowledge and Attitude Test (SKAT), Knowledge portion, was used in assessment and comparison to determine the reliability of the SKI. Factor analyses were performed to determine content validity in the parsing of data in the SKI. ANOVAs were performed in comparing answers to questionnaire items by the two populations.

Findings of this research support the SKI as a valid instrument for assessing sex knowledge in both hearing and deaf populations. Additionally, the data collected demonstrate that deaf college freshmen lag

behind hearing college freshmen in nearly every aspect of sex knowledge examined. The disparities found suggest that further investigation should be conducted to clarify the reasons for the lack of sexuality information revealed by deaf students.

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I wish to thank the psychology professors at Towson State University and Loyola College, as well as those at Gallaudet University, for their assistance in obtaining subjects for this research.

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Chapter I

Introduction

Today it seems we are bombarded with information related to sexually transmitted diseases, pregnancy, birth control, and abortion. It is very difficult to translate the raw statistics into meaningful applications, especially when they are so overwhelming.

Our society has struggled with the issue of sex education for decades, and while we have made great strides, there is still much further to go. Instead of talking about when sex education should be taught, we are still caught in the struggle of whether it should be taught at all (Adame, 1985; David, 1985). And when it is being taught, there is not much effort made to assess its effectiveness (Achtzehn, 1981; Darabi, 1982; Grossman, 1972). We assume that if a teenage girl has not become pregnant then we are successful.

Many educators overlook a major hurdle in the implementation of sex education programs: one curriculum does not suit all. Of prime concern here is the deaf population and how deaf children's access to timely, accurate sex information is most likely not transpiring (Swartz, 1990).

The bulk of the population in the United States possesses normal hearing, but there are 2 million Americans (Angier, 1991) who are profoundly deaf, and another 10 million who have hearing loss in varying

degrees. The deaf population has long been overlooked educationally, usually pigeon-holed into residential schools for the deaf in each of our 50 states. With the advent of Public Law 94-142 (PL 94-142), deaf students are finding their way into the public school system through mainstreaming. With this mainstreaming comes the long list of support services, including: IEP's (Individualized Education Programs), speech therapists, remedial reading and math (and many other subjects), school psychologists, interpreters, and deaf awareness training for the faculty who must deal with the "different" child.

Often overlooked by educators, parents, and legislators is the system's ability to educate appropriately he deaf child in all facets to which the hearing child is being exposed. Unfortunately, the educational system believes it has accomplished much if it can graduate from high school a deaf child who is able to read and write at the fourth grade level and has basic math skills (Achtzehn, 1989). Sex education is not of paramount importance, of much less priority than it is for the hearing child (Fitz-Gerald & Fitz-Gerald, 1987). It should be stressed that almost no empirical work has been done in the area of assessing sex knowledge of deaf adolescents, or the deaf population in general for that matter. Only Grossman

(1972) and Achtzehn (1981) have attempted to measure sex knowledge of deaf adolescents and young adults. Since Grossman's (1972) study some sex education curricula have been established, and now it is time to examine their effectiveness. Achtzehn's (1981) study really did not go far in assessing sex knowledge, but rather examined different techniques to examine sex knowledge in deaf college students at Gallaudet University. His research highlighted the fact that there exists no effective tool to measure sex knowledge for the deaf population.

Therefore, the need is apparent to not only establish the level of sex knowledge among deaf adolescents compared with their hearing cohorts, but also to see if a new instrument, the Sex Knowledge Inventory, or SKI (Swartz, 1990), is an effective means for assessing sex knowledge in the deaf population.

Review of the Literature

The literature examined demonstrates that only a handful of studies have been conducted in attempting to assess deaf students' knowledge of sex information. For example, Grossman (1972) conducted research at Gallaudet University (then Gallaudet College) examining sex knowledge of the deaf college student in general. His findings suggested that deaf college students lag

far behind their hearing peers in sex knowledge. What is disturbing is the researcher's belief that deafness prevents the adolescent from dealing with the abstract, claiming that it is attributable to the cognitive inability of the deaf individual to grasp emotions and feelings. Grossman (1972) does not stand alone in this opinion, for others have expressed doubts about the deaf adolescent's ability, due to auditory loss which is believed to lead to a lowered developmental capacity, to comprehend the sensual aspects of sexuality (i.e. love, compassion, sexual stimulation variants between gender), as well as the practical aspects of sexual development, such as anatomy and physiology, puberty, reproduction, and the mechanics of sexual intercourse (Bush, 1968; Myklebust, 1963).

Other researchers in the area of deafness recognized the problem as a multi-faceted one stemming from unrealistic societal expectations or beliefs. An example is Fitz-Gerald and Fitz-Gerald's (1979a) extensive work with deaf children and the education they are or are not obtaining. They found that many educators, and society in general, believe that sex education of the deaf should be dealt with in the home, and that deaf individuals (i.e., the handicapped in general and the stigma attached to their lack of sexuality) are not sexual beings and thus do not have a

need to know. It follows, therefore, that this type of education is prioritized near the bottom in most schools' curricula.

Fitz-Gerald and Fitz-Gerald's understanding (1979a) of the problem is accurate in the sense that these barriers do exist today in varying degrees, some based on religious and secular ambiguities, with other ideology stemming from myths that are perpetuated. The debate continues as to whether sex education should be taught in the schools, not only for the deaf but the hearing population as well.

There seems to be little agreement on the issue of sex education. Vance (1985) addressed the issue of sex education in the context that there exists no clear consensus that it is approved across-the-board in curricula. There exists today much ambivalence as to where and whether sex education should be taught at all at the pre-college level. With this in mind, Fitz-Gerald and Fitz-Gerald's (1979a) findings that there exists resistance to administering sex education programs in the classroom cannot be viewed as singularly applicable to the deaf population.

Due to financial and time constraints with residential schools for the deaf and with schools which incorporate a mainstreamed structure in assimilating deaf and hearing students, sexuality education does not

seem to be given the priority that it deserves. As Fitz-Gerald and Fitz-Gerald study suggests (1979a), the deaf child often falls victim to the whims of state and federal legislatures that act to compensate for the disability, but in some instances the youngster's typical day at school is so consumed with a wide array of remedial language instruction, speech therapy, and the like that time must be taken from some areas in order to meet the stringent demands of these curricula. One of the areas that is often not seen to be a integral part of the curriculum is sex education, and the task of educating the adolescent and pre-adolescent is left to peers and parents. Shaul (1981) supported the Fitz-Geralds' (1979a) findings, maintaining that, while deaf children are in need of sex information, they are generally not exposed to it.

Fitz-Gerald and Fitz-Gerald's (1979a) findings of sectors of society where the belief is maintained that deaf individuals are not sexual beings is puzzling in consideration of the fact: the rate of all Gallaudet students having experienced sexual intercourse was 52% (Grossman, 1972). Compounding this was the Rainer, Altshuler, Kallman, and Deming study (1963) that noted 19.6% of deaf adolescents had experienced homosexual behavior. This appears to dispel any notion that the

deaf population in general, and the deaf adolescent in particular, is not sexual.

Sex Education

In order to examine deaf students' knowledge of sex information, it is imperative that the area of sex education in general be examined and discussed. As with the knowledge of anything, the acquisition of sex knowledge is dependent upon formal and informal interaction. Here the review will be concerned primarily with the formal acquisition of sex knowledge by the school-aged population in general within the school setting, examining both pre-college and college sex education programs that exist or in fact do not exist.

There is a general reluctance in our society to include sex information courses in curricula at any level within the educational system. Vance (1985) attributes this to both the American society's misconception that sex education is essentially an instructional approach to fornication and that it fosters sexual experimentation.

Quite the opposite effect has been noted. A 1979 survey conducted by the Alan Guttmacher Institute (Vance, 1985) found that those teens who had received sex education were no more likely to be sexually active

than those who had not. Additionally, sex education seemed to foster the use of appropriate contraceptive measures. Adame (1982, 1985) and Helge (1989) reported similar findings supporting the notion that sex education does not promote promiscuity or sexual activity. Adame suggested that sex education curtails the rate of incidence of sexual activity and pregnancy. Danziger and Farber (1990) found similar results.

Various researchers have written articles either supporting or opposing sex education in the schools (e.g., Breasted, 1971; Fulton, 1967; Gordon, 1969; Marsman & Herold, 1986; Masters, Johnson, and Kolodny, 1988), which further emphasizes a lack of consensus among educators as to where sex education courses should be placed in the curricula, if at all. This dichotomy not only exists among researchers but also among parents, school districts, and the government at all levels. Vance (1985) cited evidence of the controversy in the state legislative bodies that mandate curricula. Only three states (Kentucky, Maryland and New Jersey) and the District of Columbia require sex education in their public schools, with other states either resisting implementation of sex education programs or totally assessing their curricula before committing to revamping it to include mandatory

sex education. The problem here is that "sex education" is a very broad term.

In defense of his pushing for more instruction in this area, Vance (1985) referred to a 1980 Gallup poll that showed that 87 percent of the public supported instruction in *marriage* and *family living*. Exactly what is meant by *marriage* and *family living* is vague to the author of this research and would not necessarily mean that the public supports the teaching of such topics as abortion, birth control, homosexuality, masturbation, and sexually transmitted diseases.

The literature suggests that the number of sex education programs in existence is rather small, not necessarily differing between deaf and hearing populations. Kirby (1984) reported that less than 10 percent of normal-hearing public school children are receiving any kind of formal sex education. Fitz-Gerald and Fitz-Gerald (1976) reported similar findings in an earlier study of sex education programs in residential schools for the deaf. These two studies suggest that not only are as many as 90 percent of the children not receiving any type of formal sex education, but also that the extent of programs being offered is similarly lacking in programs for deaf and hearing students.

In the formal sex education programs that exist, what is being taught is not always clear, but what was found in the literature suggests a minimal approach to sex education. As Sonenstein and Pittman (1984) reported, statistics indicate that very little is being taught in these areas: only 1.7 percent of the schools surveyed introduced the subject of masturbation before the ninth grade; 11.0 percent discussed contraceptives; 2.9 percent discussed homosexuality; 2.3 percent abortion; and 27.3 percent discussed sexually transmitted diseases. These numbers infer that the adolescent is acquiring the information too late, considering that the age of the average ninth grader is 15, sexually developed but still lacking formalized education in critical areas. Rice (1987) reported that the average age for first sexual intercourse was 15.7 years for males and 16.2 years for females. There is literature to suggest that the age of first sexual intercourse may indeed be lower, especially among minority populations. Leonard (1988) reported that 65 percent of black adolescents in Baltimore, Maryland, had experienced their first act of sexual intercourse at the age of 12 or younger.

The problem does not seem to be that the parents do not want sex education; in fact, the contrary seems to be true. An example is Alexander's (1984) report

that over 80% of parents in two communities surveyed would like sex education introduced in the seventh and eighth grade, but that the parents still wanted to remain the primary educator. The problem seems to be that what parents say and what they do are not necessarily parallel. Many researchers have demonstrated that parents are not discussing sexual information issues with their children (Altshuler, 1963; Dryfoos, 1983; Enterline, 1975; Gordon, 1968; Hines-Harris, 1985; Lachance, 1985) and are leaving this task to the schools. If the parents want to remain the primary educators of their children in the area of sex knowledge, but they are in fact not doing so, then the task is accorded to the schools, who have not been consistent in addressing the area of sex education in a standardized and efficient manner.

The literature has shown that not only do parents want to be instrumental in teaching their children about sex, but also that children want their parents to be more responsive to their sexual curiosities. Kids really have a wish list of sorts, as shown by Keiffer (1984). They want to talk with their parents about sex, want to know about sex, but are very much afraid to ask.

Gordon (1986) and Sanders and Mullis (1988) showed the same results and stated that children not only want

the information from their parents, but they also look to their parents as a model communicator. Clearly if this communication [that is, the relaying of sex information] is not taking place, then "...the cycle of noncommunication is repeated from generation to generation (p. 23)." Sanders and Mullis (1988) reported that 96.9% of college students surveyed (n=65) wanted sex information from their parents, but 43.1% of their parents avoided discussion totally.

Even when the parents are communicating sex information to their children, it is almost exclusively done by the mother (Fisher, 1988; Swartz, 1990). This lack of father involvement in any sex education process at home alienates the child from the father as a source of vital information, most often because the father finds it difficult to talk about sex with his child, whether it be a boy or a girl. This places the entire burden on the mother.

Parents believe, as do many educators, that knowledge about sex is harmful. Naunton (1984) cited this as a major reason why parents shy away from talking to their children about sex, which supports Gordon's findings (1986). Further supporting Gordon's (1986) findings are those of Hines-Harris (1985) who reported that adolescents felt that the school and the community were the only sources available to them in

making decisions related to sexual issues, particularly contraception. Further confounding this problem is the previously cited literature which suggests that contraception is not being taught at a satisfactory level, so it appears that the only alternative source of information for the adolescent is the community, which is to say peers.

Later research by Hines-Harris (1986), supported by Dawson (1986), stated that increased knowledge of contraceptive devices did not dictate that the adolescent would use them effectively. In fact, there was no significant change in the chances of the adolescent girl becoming pregnant. This was due to the fact that, even though the contraceptive knowledge was in evidence, there was no fundamental knowledge of the menstrual cycle and when fertilization was most likely to occur.

Similar results were found by Franz (1989), but she attributed the lack of correlation between increased contraceptive knowledge and decreased pregnancy to the general curricula's inability to address basic values. Franz (1989) believed that the facts are presented in a value-free context, with little guidance to provide the best options for the adolescents. It is apparent that partial knowledge is simply not enough.

The notion that increased knowledge dictates increased use of contraception was dismantled by De Blasi (1985). De Blasi (1985) demonstrated by a questionnaire that contraceptive use was mainly a function of psychological and sexual maturity rather than a result of knowledge gained through formal education. Although De Blasi's (1985) results are not conclusive, they suggest that the adolescent may not be gaining the optimum effects of formalized instruction but is rather relying mainly on natural, cognitive acquisition.

It appears that the educational system with regard to sex education is reactionary, sweeping much as a pendulum in response to public outcry. When the need is expressed for more instruction in the use of contraceptive methods, the curriculum is shifted away from basic biological functions such as menstruation and reproduction. Where such programs are implemented there occurs a shift away from teaching all facets of the sex knowledge spectrum (Edelin, 1990; Fitz-Gerald & Fitz-Gerald, 1987; Swartz, 1990).

Some school systems believe that they are offering their students a wonderful edge in acquiring sex knowledge. An example is where Turkel (1987) showed that Maine schools are teaching basic sex education beginning in the sixth grade, and Maine sees this as a

great benefit. While it cannot be argued that sex education is given better late than never, the average age of a sixth-grader is 12 years old, after the age of menarche for many girls.

New directions are being established, with Henschke's model (1984) proposing an interactive curriculum between the parents, educators, and the children. This model addressed the key areas of communication skills between the parents and the child, as well as issues of sex education that normally cause discomfort for the family. Not mentioned in Henschke's (1984) pilot program were the topics of AIDS, masturbation, abortion, and homosexuality. The full impact of AIDS had yet to reverberate through the school systems in 1984, so perhaps its exclusion is understandable. Less understandable is the exclusion of abortion, masturbation and homosexuality, all emotional issues that have presented problems with regard to parent-child communication and children's feelings about themselves as they struggle towards a positive ego and sexual identity.

Some literature (Strouse and Fabes, 1985) has shown that, when the child does not receive sex education in the formal setting (at school) or at home, then the natural tendency is for the child to seek it through peers and media. Strouse and Fabes (1985)

reported that the reason for the failure of formal sex education was due to the negative effect of informal education, i.e., comprised of peer interaction and television media. This perpetuates the adolescents' sex knowledge which consists of numerous myths. Although formal sex education may not be living up to expectations, Strouse and Fabe's (1985) contention that informal acquisition irreversibly thwarts the sex education process has not been documented.

There are myths that surround other areas of sex knowledge, such as masturbation. These myths are perpetuated by false information and an inability to access channels to gain correct information. With masturbation, these myths can often lead to anxiety and guilt. Even short seminars have a positive effect on reversing these attitudes connected to masturbation. An example was research conducted by Lo Presto, Sherman, and Sherman (1985), where high school males displayed more positive attitudes and fewer false beliefs after a single-session seminar on masturbation.

Along with the socialization barriers of adolescence that interfere with formal sex education, there are psychosocial and economic concerns to take into consideration as well. Numerous studies have been conducted with special populations (Delcampo, Sporakowski, Delcampo, 1976; Herz, 1984; Leonard, 1988;

McCormick, Izzo, Folcik, 1985; Powell and Jorgensen, 1984), where identifiable influences of religious beliefs, ethnic background, economic status, and urban/rural issues were addressed. The consensus of these authors is that underprivileged racial minorities suffer from inadequate access to sophisticated sex education programs, with rural youths lacking efficient means of networking among peers and suffering from the effects of financially-strapped school districts.

Many attempts have been made to improve sex education or to see which ways are best for teaching it. Herz (1984) implemented a program in a black, inner-city, junior high school (seventh and eighth graders) in an attempt to see if intense training in sex education would show a substantial increase in knowledge acquisition. The results showed that only very intensive teaching methods produced a positive impact. There is some question as to what Herz considers intensive. Herz's *intensive* program was only 40 minutes once a week for 10 weeks. Additionally, if many black adolescents are having their first coital experience by the age of 12, then instructional measures implemented at the seventh and eighth grade level are too late.

Other programs are church-based, much like that described by Powell and Jorgensen (1984), Davidson and

Darling (1986), and Jacknik (1984). Here the programs are usually limited by the church's doctrines and are at liberty to exercise free will in educational methods separate from state legislature's intervention and prudent guidance. An example of the church's unwillingness to teach certain facets of sex education, even when they have been developed and implemented by the church, is Duin's (1988) report on the reaction of the Episcopal church to the teaching of homosexuality. The New York headquarters of the Episcopal church circulated a booklet on sexuality to all of its 650 private schools. This created such outrage that the booklet was banned from many schools, mainly because it mentioned homosexuality and masturbation as acceptable.

Sex Education and AIDS

The 1980s have seen the HIV and acquired immune deficiency syndrome (AIDS) entering the United States, with the literature suggesting a great deal of attention to AIDS, but not necessarily to AIDS instruction. There are many "touchy" subjects within sex education that educators are reluctant to teach. AIDS is one of them. An area of current concern and a great deal of debate is the implementation of effective AIDS education programs; when to teach it and whether to teach it at all. Considering the severity of HIV

and AIDS, it seems negligent upon the part of the educational system that such findings as those of Hines and Randel (1988) are still evident: the average child in Maryland public schools first comes in contact with formalized AIDS education in the seventh grade, and often as late as the eighth grade (or later) in some Maryland counties. According to the American Academy of Pediatrics (1988), adolescents become sexually active as early as the seventh grade, while Vance (1985) reported that the age of sexual activity begins as early as ten years of age, placing it roughly around the fourth grade. There is an obvious gap between the time that the adolescent is becoming sexually active and the time they are offered accurate sex information from which to draw.

Although recent research has focused greater attention on AIDS as an integral part of sex education, there is still great disparity among researchers, educators, and parents as to whether AIDS education should be implemented and how much. The students seem to be the only ones in nearly total agreement: they want AIDS education and more of it (Salehi, 1989). Salehi (1989) reported that 93% of the 817 high school students he surveyed "wanted all the information about AIDS they could get" (p. 39). Nearly half of

Salehi's (1989) sample said they had not studied AIDS in school.

Even though the students want the information, they are not getting it, at least according to their own accounts. Koblinsky (1987) cited research which revealed that, of eighth and eleventh grade students, 80 percent felt inadequate in their knowledge of AIDS, and the majority wanted to receive AIDS education in the school, which supports Salehi's (1989) findings. Nearly 80 percent said they were worried about contracting AIDS. This is clear evidence that the programs at best are lacking in what is being taught, and at worse are non-existent.

Another problem the literature suggests is that gauging sex education success is based mainly on quantity and not quality. For example, Fetro (1988) reported that the focus on AIDS education programs to date has mainly been on measuring the number of students receiving such education. Very few AIDS education programs are in existence, but, where they are found, the diversity in what is being taught is great. A positive aspect to this is that, where the AIDS programs are implemented, even the weakest programs have shown significant increase in knowledge and decrease in misconceptions with regard to AIDS transmission (e.g., Fetro, 1988; Helge & Paulk, 1989;

Hines, 1988; Huszti, 1987; Koblinsky, 1987; Salehi, 1989).

A model program found in the literature was that used by the New York City Board of Education (1987), which has an excellent AIDS education program in place at the junior high school and high school level. The program allows for not only instruction, but also for discussion on pertinent issues of concern. Unfortunately, no mention is made of programs that exist at earlier grades than junior high. One can only assume, based upon public opinion and trends, that none exists.

Little research has been conducted at the rural level with respect to AIDS education. Helge and Paulk (1989) did address this issue by means of a questionnaire sent to randomly selected rural school districts in the United States. Only 25% of the schools districts responded, and, of those, 80% offered some form of AIDS education. Most programs were relatively brief, with 40% of the school districts offering only one to two hours of instruction. More disturbing is that 90% of the school districts permitted parents to excuse their children from AIDS education. Considering the less than adequate manner in which sex education is being discussed in the home, it may be a safe assumption that AIDS education is not

being taught or discussed in the home. If parents exercise their rights to prevent their children from receiving AIDS education in the formal school setting, and the compensation is not made at home, then one has to wonder where the child is acquiring accurate AIDS information.

New Approaches in Sex Education

The literature placed a tremendous amount of emphasis on pregnancy as the central issue to sex education. When gauging sex education within the general adolescent population, the incidence of teenage pregnancy is often cited as a guideline in determining success or failure of any given program (e.g., Adame, 1985; Anderson, 1983; Dawson, 1986; Dryfoos, 1983; Jorgensen & Alexander, 1983; Lachance, 1985; Poe, 1984; Powell, 1984). The rate of teenage pregnancy, while a vital concern, should not overshadow the AIDS crisis. It is hoped by this writer that researchers, educators, and parents become ever cognizant of the fact that the fatality rate for persons with AIDS is 100%, so education in this area should be of paramount concern and priority. There is hope on the horizon for sex knowledge education in the future. With the recent media coverage of issues such as teenage pregnancy and abortion, AIDS, and, to a lesser degree, homosexuality,

attention is now being drawn to sex knowledge and the lack of such knowledge in the adolescent population. In addition to the information available to the adolescent via media, there are new programs and methods of instruction being implemented across the country.

Of special interest is the use of computer technology, as Rossman (1983), and later Starn and Paperny (1986), reported its effectiveness in their research. Starn and Paperny's (1986) computer methods were introduced in the format of a "game" which demonstrated the downside of teenage pregnancy to the adolescent participant at the computer terminal. Follow-up studies reported a significant reduction in pregnancy among those who had participated in the computer instruction compared to those not exposed to this method. Again, the focus is almost entirely on pregnancy and prevention. Starn and Paperny's (1986) study did not emphasize the teaching of preventative measures against pregnancy or facets of reproduction but rather the negative effects of becoming pregnant.

Rossman (1983) used a broader approach with his use of computer instruction, tackling not only issues of pregnancy, but also love. Another added benefit of Rossman's (1983) techniques was the ability of the students to view the computer instructions in private,

at home if they so desired. This eliminated one crucial pre-existing barrier: embarrassment and awkwardness on the part of teachers and students when discussing such issues in the classroom. With this barrier removed, Rossman reported that 77% of his ninth-grade participants said the computer instructions were more personal and less threatening than traditional teacher instruction.

Computer methods should be explored, but they should not be implemented with the design of including less sex knowledge information. Another integral part of Starn's & Paperny's (1986) and Rossman's (1986) studies was that they were conducted at the high school level, well after the average age of menarche and the age at which the student's first coital experience may very well have occurred. Caution should be exercised by educators in examining such methods; this does not appear to be a solution to the problem at all grade levels.

Sex Education for the Deaf

If we are to believe the public consensus that the teaching of sexuality information encourages sexual experimentation (Vance, 1985), then Grossman's (1972) findings would suggest the opposite, at least among the deaf, college-aged population. He noted a much higher

incidence of premarital sexual activity among the deaf college students compared with his hearing sampling, but added that the sex knowledge base was virtually nonexistent in the deaf students. Grossman (1972) suggests that, if anything at all is being taught at the pre-college level to the deaf student, it is minimal at best.

To gain a better understanding of sex education programs for deaf children, an examination of Waldorf's (1969) findings are of special significance. Waldorf (1969) reported that there were 12 areas of sex education that respondents (educators in residential schools for the deaf) believed should be taught: self concept; identity of body parts; sexual identity; family living; plant and animal life; human anatomy and physiology; human growth and development; physical growth; mental growth; emotional growth; social behavior; and personal hygiene and nutrition.

With full realization that this report is over 20 years old, the report still shows the shallowness and avoidance of its proposed curriculum. No mention is made of sexual intercourse, pregnancy, sexually transmitted diseases, or masturbation, and still the areas recommended for curriculum inclusion were facing opposition from administrators and parents. This

leaves one to wonder what was actually being taught at that time.

Bass (1974) reported that curricula guides used in sex education for the deaf were in place in only a few areas, citing the Illinois School for the Deaf as one institution using a guide for their "social hygiene and physical growth" unit. This curriculum was an outgrowth of Lisensky and Withrow's (1966) work at the Illinois School for the Deaf in conducting a pilot study assessing short-term sex education instruction. The results were positive, and a sex education unit was implemented.

This unit touched on the subject of masturbation, saying that 80 to 90 percent of all males masturbate at one time or another (mentioning nothing about females), and that it did not cause harm, though it was considered immoral. There is mention of a separate unit on "marriage, childbirth, and family living" which discusses family planning and birth control. No further mention is made by Bass (1974) of what was being taught in the way of birth control. The findings of low incidence of sex education as formal instruction is supported by Fitz-Gerald and Fitz-Gerald (1976) who reported that there existed sex education programs in only 10% of the residential schools for the deaf.

The literature suggests a broadening of sex education curricula in the late 1970s. Pearson (1979) reported these findings, noting the expanding units at various schools for the deaf. Pearson (1979) cites the Model Secondary School for the Deaf (MSSD) as a prime example, where parents overwhelmingly supported the inclusion of topics of masturbation, menstruation, abortion, birth control, venereal disease, and homosexuality. Previous attempts to examine parents' attitudes about the inclusion of sex education had been thwarted by administrators, citing the study done by Bloch and Derryberry in 1971, where only 4 of 31 schools were willing to cooperate with such a study. Pearson's (1979) findings were supported by Love (1983) when citing that parents and educators were "overwhelmingly in favor of instruction in human sexuality" (p. 45).

To draw a comparison between progress in implementation of sex education in schools for the deaf as compared with "regular" schools, Pickover (1982) reported some interesting findings. He cited the existence of a human sexuality course in Anaheim, California, in 1969. It can be assumed that there were other such courses in existence at this time, but this demonstrates that, while MSSD was discussing the implementation of sex education programs in 1979, they

had already been in existence for at least 10 years in public schools for hearing children and mainstreamed deaf children. This could be due to the fact that MSSD was at that time a new facility and in the process of developing their curriculum.

Looking back again to the 1950s and 1960s, we gain a general feeling of what appears to be a paternalistic attitude that was prevalent among educators of the deaf at that time. Bush (1968) believed that the deaf children were so handicapped in their communication skills that sex knowledge could not be received in normal ways. It is not clear whether Bush (1968) believed that there is a problem with children cognitively or that children are just lagging in language acquisition. If the latter is true, then obviously the methods must be adapted to meet the needs of the student. Additionally, it is not clear what Bush (1968) means by "normal ways." Supporting the linguistic problem was Myklebust (1963), who again pointed to the problem of language acquisition which allegedly leads to problems of internalizing proper gender identity. It is clear that Bush (1968) and Myklebust (1963) perceived oralism as the only means for acquiring knowledge or internalizing gender identity.

Prior to Bush's (1968) and Myklebust's (1963) works, Chaplin (1957) reported that deaf children are incapacitated in their learning abilities of sex information because they are confined to interactions with peers rather than parents or teachers (in a residential setting). Again, language seems to be seen as the major problem, i.e., that the students converse in manual communication among themselves but not with the teachers and parents who are predominantly hearing.

Shedding further light on language acquisition is recent research reported by Petitto (cited in Angier, 1991). Petitto (1991) found that deaf infants, who are stimulated by their parent's use of sign language at home, babble with manual gestures before they are 10 months old, the same time that hearing children babble. This finding reinforces the argument that deaf children can acquire language at the same time as their hearing counterparts, provided the stimulation exists. A key component blocking much of this stimulation is the fact that only 10% of deaf children are born to deaf parents, and, of the remaining parental units, only a very small minority learn sign language, regardless of how profound their child's hearing loss is (Baker & Cokely, 1982). Therefore, even though the capacity exists for early, normal language acquisition, the deaf child often waits years for their first visual language

stimulation. This lag places the deaf child at a distinct disadvantage in attaining and maintaining language, social, and educational competency when compared with hearing children.

Other investigators believed that exposing the "sheltered" deaf child to the hearing population will have a positive effect on language acquisition. A substantial amount of emphasis is placed upon the deaf child to have more contact with their hearing peers, feeling that this will have a beneficial effect on their ease in attaining knowledge (Bush, 1968; Thompson, 1959). It is not clear why Bush (1968) and Thompson (1959) believed that simple exposure of a deaf child to a hearing child will result in the transfer of knowledge. The majority of deaf children use American Sign Language (ASL), whereas very few hearing children know ASL. This creates an immediate language barrier.

Some researchers realize that, in order to increase the language abilities of the deaf child, one sometimes has to intervene at an earlier age with age-appropriate instruction. Hill (1971) first addressed the language issue with some realistic steps with directions for parenting and increasing the ease of language acquisition, and lowering the age at when it first occurred. Even with Hill's (1971) insight to the need for early language acquisition, he still believed

that the deaf child may not understand the emotional aspect of sex. This statement is very vague, for this also holds true for hearing children, as it is very much age-dependent, with numerous other variables affecting emotional growth.

The literature shows some rather questionable conclusions drawn by researchers concerning the sexual activity of deaf people. This has, perhaps, led to the false conception that deaf people are not sexual, or indeed asexual. An excellent example is where Altshuler (1967) reported that deaf male and female adolescents disclaimed any sexual experience during their school years. The conclusion was made that deaf adolescents differed from their hearing peers with respect to the prevalence of sexual experimentation and activity in normal adolescence. What Altshuler (1967) failed to emphasize was that this information was gathered during interviews with the adolescents while their parents were present, an environment which is not conducive for the adolescent to be open and honest about their sexual experimentation. Drawing general conclusions from such biased results is quite dangerous.

Rainer, Altshuler, Kallmann, and Deming (1969) were involved in this same study and noted that there seemed to be a higher pattern of homosexual activity

among deaf adolescents, roughly about 19.6 percent, as compared with the hearing adolescent population (no figure given). They cited limited off-campus privileges, limited exposure to sex information in all aspects of social and educational life, and the lack of a home life conducive to open communication between parents, siblings and the adolescent.

Their findings are significant, not only for the fact that the incidence of homosexual behavior is high and the reasons stated are plausible in varying degrees, but this should have been a mandate for inclusion of such topics in sex education courses. Then again, many courses were not in place at this time.

As is often the case and has been stated earlier by way of the literature, what children and others deem adequate with regard to sex education rarely coincides. Gordon (1968) reported results of inquiries made of 150 deaf junior and senior high school students and their parents. The parents believed that the sex education being supplied their children was adequate; however, the students did not agree. In fact not one of the students felt it was satisfactory. Other studies (Dubbe, 1965; Kellinger, 1977; Schab, 1968) reported similar findings.

This suggests that, if the deaf adolescent is receiving the information at all, a great deal of it is coming from peers. This hypothesis is supported by many researchers (Altshuler, 1963; Brick, 1968; Enterline, 1975; Kelliher, 1977) who found that, of the adolescents interviewed, more than half were gaining the bulk of their knowledge outside of the home and school, mainly from friends.

In obvious reaction to the concerns of educators and parents alike, as well as adolescents, an increasing number of sex education programs were implemented, but were mostly concentrated around the Washington, D.C., area in connection with an outreach program at Gallaudet University (then Gallaudet College). As cited by Fitz-Gerald and Fitz-Gerald (1979b), 77% of public residential schools for the deaf were offering some type of sex education program. This compares well with the level being offered at public schools. Additionally, 15 percent offered separate courses at the primary level, 60 percent at the elementary level, and 82 percent at the secondary level. These numbers again measure well when compared with normal-hearing children in public schools. One has to wonder what kind of course was being offered at the primary school level. It consisted of basic animal and plant physiology and gender differences. Even

though most schools offered a vast array of topics, including venereal disease, sexual intercourse, masturbation, birth control, abortion, homosexuality, and rape, it is not clear at what grade level these were first introduced. Fitz-Gerald and Fitz-Gerald's (1979b) research is not clear in consideration of timely implementation and instruction of information and when most appropriate, so it can only be assumed that the residential schools for the deaf were, and still are, supplying the information in basically the same time frames as are the public schools to the hearing children, or possibly a little later (Edelin, 1990; Fitz-Gerald & Fitz-Gerald, 1979b; Minter, 1983; Swartz, 1990).

Their findings are clarified further when indicating that one out of three residential programs offers no sex education courses whatsoever. In addition, 15 percent of the residential schools that responded (n=99) scheduled sex education classes "as needed." This would imply crisis intervention, a reactionary philosophy to sex education.

As was previously mentioned, many educators discount the deaf child's inability to acquire sex knowledge as the result of deficiency in communication. While this philosophy seems to have come from those that have little understanding of the special needs as

prescribed by deafness, Fitz-Gerald and Fitz-Gerald (1978, 1979a) have shed a more sympathetic and philosophical light upon methodology. Fundamental to any method must be full utilization of visual means in which to convey the sex information. Filmstrips, television, overhead transparencies, 3-dimensional models, and the like are recommended to enhance sex knowledge acquisition.

A number of researchers (Bednarczyk, 1982; Fitz-Gerald & Fitz-Gerald, 1986; Kessler, 1980; Minter, 1976) have developed curriculum materials to aid in the instruction of sex education. These materials were often adapted media material consisting of videotapes that utilized closed-captioning. Other materials are widely used, such as those developed by Ball State University and the Illinois School for the Deaf. It is unclear whether each residential school that offers sex education as a part of its curriculum adopts one of these models or implements one of their own.

One issue of concern is Minter's (1976) guide which was developed for teaching human sexuality to Gallaudet College students in a physical education course. This guide excludes such topics as masturbation, abortion, rape, and sexual abuse. The concern expressed that topics covered are very basic, and one would have expected that this knowledge would

have been acquired by the adolescent well before entering [Gallaudet] college.

Other sex education texts have been developed with good intentions in mind but these are seemingly missing the central issues and reasons behind sex education: age appropriate, accurate information that is not done in a crisis intervention-type manner. Another example, like Minter's (1976) guide is Young's (1980) student booklet used in teaching deaf, high school adolescents about human sexuality, written for students with a second to fourth grade reading level. The emphasis is a clear, low-register linguistical approach to the subject. The problem with this approach is that the course is taught too late, after the deaf child has entered adolescence, and the material is watered-down into a non-scientific approach. In nearly all areas the anatomical or scientific words and processes are sacrificed in lieu of basic, non-specific terminology. Such an approach may be fine for the deaf student at the elementary school level but not at the high school level when students are ready to graduate, work, marry, and raise families in a planned manner.

Bednarczyk's (1982) guide intended for pre-college use covers even less information. Aspects incorporated into this guide are the extensive use of group activities and a great number of sophisticated

diagrams. This is seen as important in consideration of how deaf students learn best: through interaction and visual stimulus (Baker & Cokely, 1982).

Davis (1985) developed a text to be used at the Northwest Campus of Gallaudet University (then Gallaudet College). This was designed for preparatory students who had graduated from high school but whose reading and/or math skills were inadequate for regular admission as a college freshman. Unfortunately there are no diagrams or pictures in this guide; it is 100 percent text. Considering the student that it is designed for, this seems less than adequate.

Fitz-Gerald and Fitz-Gerald's (1986) guide, [even though the guide does not include the sensitive topics of abortion, masturbation, and homosexuality] presents the information in a highly visual/pictorial way to the deaf pre-college student. Included within this guide are quite a few manual communication signs of sexuality.

It was pointed out earlier that the mainstreaming of deaf students in the public school system may have a negative effect upon the time that can be devoted to such topics as sex education. These same time constraints hold true for deaf students who attend day and residential schools for the deaf, with speech and language training often comprising a substantial block

of time. Therefore, it would be unfair to say that deaf students are treated unequally in either setting in terms of curriculum offerings.

What may be true is the limitation placed on the deaf student in their ability to understand what is being taught in the mainstreamed school environment. As provided under PL94-142, all deaf students in public schools have legal access to qualified interpreters, whether they be oral, sign language, or cued speech, but this is often not the case.

Woodward (1977) states that, although the interpreter may be present in this educational setting, this is no guarantee that the information, especially sensitive sex information, is being accurately interpreted to the deaf student. Woodward cites that many interpreters are uncomfortable in relaying sex information, even though not doing so is in violation of the Registry of Interpreters for the Deaf's Code of Ethics. It could be speculated that interpreters are not monitored in isolated mainstreamed settings; what is taught and what is interpreted often differ, resulting in interpreter censorship. It could be postulated that when female interpreters, who comprise the bulk of the interpreter work force, are interpreting sex information to a deaf male student.

As possible problem is widespread lack of interpreters' knowledge of appropriate sex signs.

Sex Knowledge of Adolescents

In view of the inconsistencies within the curricula of sex education programs and the crisis that exists in our society with regard to teenage pregnancy, abortion, and the AIDS epidemic, an examination must be made of what the adolescent is acquiring through sex education curricula as they exist today. While it is recognized that the deaf adolescent has special needs, most notably communication in acquiring accurate and complete sex information (Achtzehn, 1981; Bass, 1974; Fitz-Gerald, 1987; Lewis, 1982; and Pearson, 1979), it does not necessarily follow that the hearing adolescent is getting a sharply clearer picture of sex information. Thus, various programs that focus on the general hearing population must be viewed as a benchmark for later comparisons to the deaf population.

A large number of studies have been conducted examining a wide array of subjects in connection with the acquisition of sex knowledge. Some of the subjects examined were: masturbation; pregnancy; birth control, proper contraceptive use; homosexuality; AIDS; rape; reproduction; menstruation; sexually transmitted diseases, such as venereal disease and gonorrhea;

sexual abuse; and abortion. Most studies have found that students, from kindergarten to college, have poor knowledge of sex-related information (Darabi, 1982; De Pietro and Allen, 1984; Huszti, 1987; Kleinginna, 1981; Koch, 1983; Mims, Yeaworth, and Hornstein, 1974; Murstein, 1989).

Morrison (1985) found widespread ignorance among public school adolescents in the use and knowledge of birth control methods. She reported that the great diversity of materials used in educating the adolescent is the ultimate weakness in the curriculum. The adolescent walks out of the classroom confused and has only a superficial knowledge in the areas of reproduction and physiology. Jorgensen and Alexander (1983) came to a similar conclusion: there was basically an uncertain status of sex education within the school systems that led to undue adolescent pregnancy risks.

Caron (1986) reported similar findings and suggested the implementation of more contraceptive information at the college level, mainly because entering freshman were for the most part ignorant of birth control methods. Anderson (1983) reported similar findings among teenagers.

While contraceptive education would certainly be helpful, even at the college level, it should be taken

under advisement, as stressed earlier, that this is too late. If the educators must wait until the child enters college to educate them about contraception, then the knee-jerk reaction to the problem is still in existence. We can only wonder what is happening to the many students who graduate from high school but do not continue onto college? The importance of gaining such knowledge within the classroom, transmitted accurately, as opposed to media and peers who often perpetuate myths, was stressed by Pope (1985).

Identifiable as key functions of sex information knowledge was ease and degree of communication (Fisher, 1986; Polit-O'Hara and Kahn, 1985). Here the familial unit was stressed as having the greatest influence on the child's communication skills. Considering the communication issue in the familial unit where a deaf child is present, more often than not they are unable to receive and be perceived on the same lingual level as their hearing siblings and peers. This is based upon reported communication barriers in which parents employ oral communication and their deaf children use manual communication (Baker & Cokely, 1982; Swartz, 1990).

Many of these studies, such as Lipqf's (1985), identified weak areas within post-secondary institutions with regard to sex knowledge in general.

Arafat and Allen (1977) and Renshaw (1989) reported that entering college students were lacking in knowledge of sexually transmitted diseases. While Arafat and Allen's (1977) study focused on venereal disease and Renshaw's (1989) on AIDS, the conclusions were similar: knowledge was lacking. Both reports recommended the implementation of programs to address this issue. This has resulted in increased implementation of sexual education courses at the college level (Lipqf, 1985).

The literature shows some work being done at the elementary level in schools. In Kern's (1984) study, third, fourth, and fifth grade students showed significant increase in sex knowledge after an intensive, eight-week, sex education seminar was taught.

At the high school level, Klein (1983, 1984) reported that high school students and alumni showed an increase in sex knowledge after completing the sex education curriculum. Additionally, alumni's knowledge seemed to decrease in direct correlation to the number of years since graduation. Klein (1983, 1984) believes that this implies that sex knowledge may require reinforcement, but it appears that the decline (this was not a longitudinal study) was rather the effect of older graduates not being exposed to a revised

curriculum while in high school. It could very well be the result of the effects of recent and remote long-term memory. It is not unusual for a student to do well on a test immediately after the material has been presented and they have studied for the exam. Give the same students the exam one year later and an attrition of knowledge would be expected.

Davidson and Darling (1986) demonstrated that sex knowledge does not necessarily correlate with sexual behavior. They initially tested college freshmen with regard to their knowledge. Then they compared the students' knowledge with the students' stated sexual practices; it became quite evident to them that they were not making use of the knowledge they had. Davidson and Darling (1986) stated that the students' overwhelming attitude was "yes, I know, but it won't happen to me [pregnancy, AIDS]."

This seems to be the battle that most educators are waging today. Not only must they be allowed to teach vital information, but it is difficult to break through the adolescents' notion that they are sexual beings, and pregnancy, AIDS, and sexually-transmitted diseases are not selective and hold no prejudice as to who they affect or infect.

Assessment of Sex Knowledge of Adolescents

The literature suggests that finding proper tools for assessing sex knowledge is difficult. Achtzehn (1981) reported many problems were experienced when trying to administer a test to assess sex knowledge among college students. Although Achtzehn's (1981) initial intent was to assess sex information knowledge in deaf students, he expressed difficulty in finding appropriate instruments to measure knowledge in the normal-hearing control group. Most of the problems encountered centered around the language of the tests, which was much too advanced for the average deaf as well as hearing college student; the inability to use the instrument with large groups; and gaps in its content. This held true for the well known Sex Knowledge and Attitude Test (SKAT; Lief and Reed, 1979), as well as other tests that were being used throughout the country. Despite these facts, Miller (1976) used the SKAT to examine masturbation attitudes, even though only 5 items of the 106 true/false questions are related to masturbation. Miller's (1976) findings must be called into question, considering the small number of items that could logically be used as a scale score.

The main problem with the SKAT is its assumption of high linguistic ability and the suspected ambiguity

of many questions (Achtzehn, 1989; Edelin, 1989). This emphasizes the need for other testing instruments which are minority group-sensitive, as well as language specific.

Achtzehn (1989) acknowledged the inherent weaknesses in the SKAT and decided to use a 70-item true and false sex-knowledge test, which was ultimately whittled down to 32 items. Achtzehn (1989) commented, in a personal interview, that the results of this test were invalid simply because of the insufficient number of items on the test.

In some instances, pilot studies were used with variations of the SKAT, or specialized tests were used when a narrow or more specific base of data was desired. One example of such a test was that administered by The American Alliance for Health, Physical Education, Recreation and Dance (1988). They developed the NASHS (National Adolescent Student Health Survey) and administered it to more than 11,000 eighth and tenth graders. This test was very broad in its concern but did address the issue of AIDS and sexually transmitted diseases in general, touching on sexual behaviors to a certain degree. The test was dichotomous (true and false) in nature, with 21 questions in the above mentioned areas. In the opinion

of Edelin (1989) the NASHS's questions were not specific in nature, and tapped behavior, not knowledge.

Assessing contraceptive use has been one way in which researchers have attempted to determine sex knowledge. An example is Brown and Pollack's (1982) study of contraceptive knowledge compared to contraceptive use. They found that increased knowledge does not have a bearing on sexual behavior. Even though many of the undergraduate subjects who participated in this study were well versed on contraception and its use, this did not translate into the use of contraception at any higher rate than those with less knowledge.

The trend today seems to be away from general sex knowledge testing and assessment and towards drug awareness or specialized forms of sex knowledge testing, like those that inquire about the knowledge and use of contraceptives, as stated above. The literature has shown that contraceptive knowledge assessment has been popular because it has been used frequently in comparing teen pregnancy rates in the U.S. with other developed countries. An example is Glazer's (1989) research which reported that sex education courses do not seem to prevent teenage pregnancy or encourage the use of contraceptives. Glazer (1989) still supports sex education, stating

that "it is important to give teenagers options because they are at an age when they have to make decisions for themselves" (p. 338). She feels that this education should be coupled with scare tactics of how an unwanted pregnancy can ruin your life and should emphasize that American teenagers have one of the leading unwanted pregnancy rates among all developed countries.

Assessing Sex Knowledge of Deaf Adolescents

There exist two fairly well known research studies in assessing sex knowledge of deaf adolescents, those of Grossman (1972) and of Achtzehn (1981). Grossman (1972) utilized the SKAT to compare deaf and hearing college students. There exist problems in using this test, as Achtzehn (1981) pointed out. The test is geared to a higher level of English comprehension, with a very high register of syntactical and semantical elements. Grossman (1972) contended that he compensated for the high register of the vocabulary by simplifying it but overlooked modification of the syntax. This places the results under suspicion because the deaf students' knowledge of English syntax is not on par with that of their hearing counterparts. Despite Grossman's (1972) research which was based upon the revised SKAT, all that can be found in his published work is the original SKAT itself, not his

revised instrument. We can only assume that the same questions were asked in a different form, but this leaves the reliability of his instrument open for question; it certainly makes replication impossible.

A handful of other assessments were conducted by others (Boothroyd, 1976; Enterline, 1975; Lass, Franklin, Bertrand & Baker, 1978; Slappey, 1974), but the methods were not necessarily of highly sophisticated experimental design. The testing instruments were not standardized, they had not been examined for validity or reliability, and again the English language level was very difficult.

There has even been somewhat subjective assessment by educators of their own sex education materials. A prime example is Minter (1983), who states "[I] have written two workbooks that have been successfully used at Gallaudet College [now Gallaudet University] in the areas of Sex Education and Drug Education." Minter (1983) suggests that her workbooks used at Gallaudet for deaf college students have been successful but she offers no empirical measure of success.

Swartz (1990), in a pilot study of sex knowledge of college freshman, tested deaf college freshmen (n=43) at Gallaudet University, Washington, D.C., and found them lagging far behind in knowledge when

compared to hearing college freshmen (n=26) at the University of Maryland, College Park. Swartz used the Sex Knowledge Inventory (SKI) he developed himself. Of the deaf freshmen tested, it was not determined whether they had taken the sex education course offered at the preparatory level at Gallaudet's Northwest campus. The majority of incoming freshmen at Gallaudet do not enter the remedial preparatory program. In order for Minter's (1983) purported success to be fully realized, it would seem appropriate that the sex education course now being used at Gallaudet's Northwest campus also be used on the main campus and required of all freshmen. (Minter's workbooks are still being used at Gallaudet University).

The best empirical test of sex information to date is that of Achtzehn (1981); however, there exist some inherent problems with the methodology used in this study. First, the instrument used to assess knowledge consisted of only 32 items on a true and false test. The validity of such a test must be questioned considering that a variance in a few errors on the test would have a disproportionately large effect upon the statistical means.

Secondly, the test was adapted into a sign language version, one which was reviewed and modified by native signers and graduate students at Gallaudet

College. A deaf student signed the videotaped version, but again some critical areas were overlooked. Sign language falls along a vast continuum, unlike the format of written English on a given test. At one end of the continuum there is Signed Exact English (SEE), an almost exact replication of English words and grammar manually. At the other end of the continuum is American Sign Language (ASL), a true language (unlike SEE), and though manual and gestural it replicates Chinese very closely in syntax and other grammatical features. In the middle of the continuum is Pidgen Signed English (PSE), a manual method that incorporates aspects of both SEE and ASL (Baker & Cokely, 1982). There is no mention made of where along this continuum the signer operated; whether the videotaped version is closer to SEE, ASL, or to PSE.

The only background criteria sought out by the investigator of the deaf subjects was to make sure that: they had a hearing loss of 70db or greater; their hearing loss was prelingual; they were at least 18 years of age; and they grew up in an English-speaking country.

Bearing this in mind, the investigator had no way of knowing what method of communication the subjects preferred-- whether it was oral; SEE, with English-word mouthing upon the lips; PSE; or ASL. Additionally,

administering such a test via videotape may be awkward in and of itself, much different than a standardized test or interview. The image presented on the television monitor is two-dimensional, and diminishes the ease of understanding spatial and location markers in ASL, both extremely important linguistical features of the language.

Achtzehn (1989) was well aware of the deficiencies of his instruments. The end result of his research showed that there existed no significant difference between the deaf and hearing college students in sex knowledge. As it turned out, his research really focused on the tests themselves, not the results. The test was ultimately made into three versions: a narrowed-down 32-item true and false test; the same test modified lingually; and a third test signed on videotape.

It appears that Achtzehn (1982) was correct in his assessment that an effective inventory did not exist for measuring sex-related information of the deaf college student. Based upon this premise, an inventory assessment tool was developed by the author which minimizes English language complexities. This was done by Swartz (1989) with the assistance of Edelin (1989), an instructor of human sexuality for over 17 years.

Swartz (1989) extracted certain questions from the SKAT and reworded them with assistance from Edelin (1989). Edelin (1989) also shared collection of human sexuality examinations administered to deaf college students at Gallaudet. Additionally, Edelin (1989) shared her experiences of teaching human sexuality to deaf college students with Swartz (1989) which involved going over documented pre- and post-test measures used in the classroom used to assess students progress during the human sexuality course. This identified many myths and weak areas of knowledge with regard to sex information. The initial SKI was completed in 1989 by Swartz.

Swartz (1989) administered the SKI to several deaf college freshmen at Gallaudet to see if there were any inherent flaws in the wording of the instrument, i.e., ambiguity, linguistic complexity beyond student's comprehension, and misinterpretation of the lexicon used. The pilot subjects were instructed to write comments on the SKI where they were not sure of the wording of a question or instructions given. Following the pilot administration Swartz revised the SKI and used it in his initial research (1990).

Edelin (1990), Kensicki (1990), and Meisegeier (1990) first examined the SKI for face and content validity and were satisfied with the instrument with regard to these areas. After Swartz's further testing

using the SKI in the fall of 1990 and the spring of 1991, and consultation with Fenzel (1991), Mendelson (1991), and Lo Presto (1991), minor changes were made to the wording of some questions/statements in the SKI. Bass (1991) examined the SKI for face and content validity and agrees with Edelin (1989) that it is valid with regard to content.

The SKI and SKAT were examined by a panel of experts at Gallaudet University for readability and all found the SKI to be better or equal to the SKAT with regard to readability for deaf freshmen at Gallaudet (see Appendix B). Dr. Carol Lassaso (July, 1991) of Gallaudet's Department of Education concurred that assessment of the instruments for readability must be done in this manner: "Reading level is a misnomer and cannot be assigned, especially for the deaf population. There exist no formulas with which to establish a reading level since reading comprehension is not something that can be measured linearly" (Lassaso, July, 1991).

Statement of the Problem

The purpose of this research is to compare knowledge of sex-related information in samples of deaf and hearing college freshmen. Accurate information on human sexuality is essential in preventing sexual,

psychological, and a variety of psycho-social behavioral problems and disorders. As a consequence, the proper and efficient dissemination of sex information to the adolescent, and, for that matter the pre-adolescent, is of paramount importance. Unfortunately, there is evidence available to suggest this dissemination is not occurring properly, particularly among deaf persons. The review of the literature revealed disparities that exist between the deaf and hearing populations with regard to the acquisition of accurate and timely sex information.

Evident from the onset of physically gathering documentation for the review was the sparse amount of material available in written form that examined sex knowledge within the deaf population. Much of the research that reported on the extent of sex knowledge among deaf individuals reflected a narrowness of perspective with little regard for the potential of the deaf adolescents' capacity to learn as effectively as their hearing counterparts. Prevalent throughout the sources found was a paternalistic attitude towards acquisition of such information, as well as a mindset promoting prescriptive linguistics as the answer to language obstacles.

Stated earlier was the problem that tools used for assessing sex knowledge of deaf students are relatively

non-existent. The instrument developed for this study, the Sex Knowledge Inventory (SKI), used once in previous research (Swartz, 1990), will be tested again, with its reliability examined and it validity compared with the well-know Sex Knowledge and Attitudes Tests (SKAT, SKAT-A).

A few observations can be made at this point:

1. Sex education for deaf students lags behind that of normal-hearing students. There is no clear agreement on what should be taught, the manner in which it should be taught, and who should be teaching it (the parents or the school).

2. Very few attempts have been made to assess sex knowledge of deaf adolescents, and they are admittedly flawed, or of limited scope, or both (Grossman, 1972; Achtzehn, 1981).

3. Assessment instruments used in gauging the effectiveness of sex education have inherent biases which create confounds in attempting to assess the deaf student. The questionnaires contain a register of the English language that is far above that understandable by the average deaf student; therefore, the validity and reliability of these instruments must be seriously questioned.

While many of these items are true with relation to hearing adolescents, deaf adolescents often find

themselves at the mercy of the information shared by their limited peer group, a group that shares similar means of communication. Sex information that is shared on a limited basis within the home of the hearing adolescent is further limited in the home of the deaf adolescent due to communication barriers.

4. For the general population a consensus does not exist on the implementation of sex education courses within the primary, elementary, and secondary levels of public schools.

5. For the general population there appears to be a great deal of ambivalence with regard to the teaching of certain subjects in schools, namely AIDS, birth control, homosexuality, reproduction, abortion, and masturbation. More often than not, curricula are implemented in reaction to crisis rather than careful planning.

6. There exists the misconception that sex education is essentially an instructional approach to fornication and that it fosters sexual experimentation (Vance, 1985). As long as society maintains this perception of formalized instruction, then little will be done to foster correct sex knowledge and dispel myths.

7. Sex education, if implemented at all, is usually occurring too late to be of proper

effectiveness as measured by the rate of teenage pregnancy. Considering that adolescents are becoming sexually active at the age of 10 in some cases, and that courses containing information about reproduction, contraception, and AIDS are not offered until many years later, there exists a gaping hole in the curriculum.

8. While parents wish to be the primary sex educators of their children, they are not assuming this role. Children want to have access to sex knowledge, but, due to the ambivalence of educators and parents, they are often left to peers and mass media to gain this information. These two, especially peers, have been shown to have less than accurate knowledge, and go far in perpetuating myths.

9. Deaf individuals have long been regarded as less than sexual beings, and are therefore denied the right to have proper sex information. The tide is starting to change, but ever so slowly.

Our society is currently in a period of critical public concern about issues involving sexuality (AIDS epidemic, the world's highest teenage pregnancy rate [Rice, 1987], abortion, etc.) made worse by the lack of complete and accurate sex knowledge. In this time of critical concern, it is crucial that the entire population have access to accurate information and that

hearing loss not impede the acquisition of this information.

Prior attempts to assess such knowledge among the hearing population have failed to produce a sweeping change or implementation of more appropriate sex education curricula. Very few programs are in existence today that address the deaf population's special communication needs.

Statement of the Hypotheses

In consideration of the above observations derived by review of the literature, the following hypotheses are made:

1. Hearing freshmen will demonstrate more sex knowledge than deaf freshmen. There will be a higher percent of correct answers for the true and false, labelling, and matching sections of the Sex Knowledge Inventory (SKI) among those college freshmen with hearing as compared with deaf college freshmen.

2. Obtained reliability alpha coefficients for the SKI will demonstrate that the SKI has high internal reliability as an instrument.

3. Factor structure of the SKI will be divided into anatomy and physiology, reproduction, masturbation, birth control, homosexuality, AIDS, and sexual intercourse.

Chapter II

Method

Subjects

Freshmen college students from Gallaudet University, Washington, D.C., Towson State University, Towson, Maryland, and Loyola College of Baltimore, Maryland, participated in this research.

Freshmen were obtained by recruitment through the psychology departments of the three colleges. Permission was obtained from each psychology department to solicit subjects in all Introduction to Psychology and General Psychology courses. Most professors were willing to offer the students extra credit for participation, or participation in experiments is a requirement of the course. During the solicitation, letters were given to the students informing them of their commitment for participation in this study and the date, time, and place that the SKI and SKAT would be administered (Appendix A).

General Background Information

A summary of the general background information is presented in Tables 1 and 2. Of the 38 subjects at Gallaudet University, 52.6% were female (n=20) and 47.4% were male (n=18). Of the 75 subjects at the Towson State University, 77.3% were female (n=58) and

22.7% were male (n=17). Of the 127 subjects at the Loyola College, 81.9% were female (n=104) and 18.1% were male (n=24). The overall gender distribution for hearing subjects with a total of 202 subjects, was 80.20% female (n=162) and 19.80% male (n=40). This indicates that the Gallaudet (deaf) sample had a more balanced subject gender distribution.

The mean age of Gallaudet subjects was 23.34 years (n=38), while the mean age of Towson State University subjects was 18.76 years (n=68), and that of Loyola College subjects was 17.91 years (n=113). The overall gender distribution for hearing subjects, with a total of subjects, was 18.29 years (n=181). This shows a marked difference in age between the mean ages for the deaf and hearing samples of 5.05 years.

At Gallaudet, Towson State University, and Loyola College the predominant race of the subjects was Caucasian, 87.50% (n=210) with African-Americans comprising 7.90% (n=19), and others 4.60% (n=12). There was a higher proportion of black subjects at Towson, 14.70% (n=11) compared with 7.90% (n=3) at Gallaudet, and 3.90% (n=5) at Loyola. This showed almost no diversification of testing along racial lines.

The predominant religion of subjects at all three colleges was Catholic at 56.70% (n=135), with 14.30%

(n=34) Protestant, and 29.00% (n=72) being other religions. The Loyola had the highest Catholic population at 79.50% (n=101), which is not surprising because it is a Jesuit institution. Although the actual number of subjects who listed their religion as "other" was relatively high at the three colleges, there is no way of determining from the questionnaire exactly which religions were represented by the choice "other" although many subjects wrote in "baptist" next to this choice. Of note is the relatively high percentage of Jewish subjects at Towson State University compared with the other samples, with Towson having 12.90% (n=9), Gallaudet with no one Jewish, and Loyola having 1.60% (n=2) Jewish subjects.

Loyola and Towson subjects reported with more frequency that their fathers had postgraduate degrees as compared with those subjects at Gallaudet (see Tables 3 and 4). The significance of this was shown in the statistical tests performed which showed high variance on SKI and SKAT performance based upon father's education level.

TABLE 1

General Background Information by Sample in Percent

	Sample		
Attribute	Gallaudet	Towson	Loyola
Female	52.60	77.30	81.90
Male	47.40	22.70	18.10
Caucasian	78.90	84.00	92.10
African-American	7.90	14.70	3.90
Hispanic	2.65	0.00	2.40
Asian	5.30	1.30	1.60
Native American	2.65	0.00	0.00
Other	2.65	0.00	0.00
Catholic	26.30	32.40	79.50
Protestant	26.30	20.30	7.10
Jewish	0.00	12.20	1.60
Mormon	0.00	0.00	0.00
Other	44.70	35.10	11.80

TABLE 2

General Background Information by Audiology in Percent

Attribute	Audiological Group	
	Deaf	Hearing
Female	52.60	80.20
Male	47.40	19.80
Caucasian	78.90	89.10
Black	7.90	7.90
Hispanic	2.65	1.50
Asian	5.30	1.50
Native American	2.65	0.00
Other	2.65	0.00
Catholic	26.30	61.90
Protestant	26.30	11.90
Jewish	0.00	5.40
Mormon	0.00	0.00
Other	44.70	20.30

TABLE 3

Subjects' Father Education by Sample in Percent

Attribute	Sample		
	Gallaudet	Towson	Loyola
Less than HS	21.10	6.70	2.40
HS Diploma	34.20	20.00	13.40
Some College	7.90	28.00	16.50
Bachelor's	23.70	20.00	30.70
Master's	10.50	20.00	26.00
Doctoral	2.65	4.00	6.30
Postdoctoral	0.00	1.30	4.70

TABLE 4

Subjects' Father Education by Audiology in Percent

	Audiological Group	
Attribute	Deaf	Hearing
Less than HS	21.10	4.00
HS Diploma	34.20	15.80
Some College	7.90	20.80
Bachelor's	23.70	26.70
Master's	10.50	23.80
Doctoral	2.65	5.40
Postdoctoral	0.00	3.50

Sex Education Background

Most subjects in this study had some type of formalized sex education. Of the Gallaudet subjects, 73.70% (n=28) had a pre-college sex education course, while 90.90% (n=181) of the hearing subjects had formal pre-college sex education (see Tables 5 and 6). The mean age at which this course was taught was 13.93 years for Gallaudet (nearly the 8th grade) and 13.63 years for the hearing samples combined, better than midway through the 7th grade (see Tables 7 and 8).

As can be noted in Table 5, a higher percentage of deaf subjects and Towson subjects had experienced sex to the point of orgasm than had Loyola subjects. This carried over to Table 6 with a higher percentage of deaf subjects having experience sex to the point of orgasm.

The questionnaire asked the subjects to rate various subjects in their sex education courses with regard to whether they felt they had received sufficient information in each respective area. Tables 5 and 6 show these results.

TABLE 5

Sex Education History by Sample in Percent

Variable	Sample		
	Gallaudet	Towson	Loyola
Had Sex Education Course	73.70	90.70	91.10
Has Sex to Orgasm	73.70	77.30	54.70
Abortion*	48.30	36.00	36.70
Reproduction*	89.70	85.10	78.10
AIDS*	69.00	52.00	51.60
Homosexuality*	48.30	30.70	29.70
Birth Control*	79.30	73.50	54.70
Masturbation*	64.30	29.30	26.60
Anatomy*	58.60	76.00	64.10
Intercourse*	82.80	49.30	59.40

Note

*Subjects' reported satisfaction with instruction in this area

TABLE 6

Sex Education History by Audiology in Percent

Variable	Audiological Group	
	Deaf	Hearing
Had Sex Education Course	73.70	90.90
Had Sex to Orgasm	73.70	62.90
Abortion	48.30	41.10
Reproduction	89.70	91.10
AIDS	69.00	58.70
Homosexuality	48.30	34.10
Birth Control	79.30	66.70
Masturbation	64.30	31.10
Anatomy	58.60	77.20
Intercourse	82.80	62.80

Note

*Subjects' reported satisfaction with instruction in this area

TABLE 7

Subject Age in Relation to Sex Education by Sample in Years

	Sample		
Variable	Gallaudet	Towson	Loyola
Present Age	23.34	18.76	17.91
Age When Taught Sex Ed	13.93	13.85	13.56
Age Difference	9.41	4.91	4.35

TABLE 8

Subject Age in Relation to Sex Education by Audiology in Years

	Audiological Group	
Variable	Deaf	Hearing
Mean Age Now	23.34	18.29
Mean Age Then	13.93	13.63
Age Difference	8.11	4.66

The hearing subjects reported with higher frequency that their mothers had served as the source from whom they had learned most about sex-related physiology, at 23.30% (n=47), as compared to 2.90% (n=1) for the Gallaudet (deaf) sample (see Tables 9 and 10). The deaf subjects reported that they relied more heavily upon friends, 52.90% (n=18) compared to the hearing subjects at 34.70 (n=70).

The subjects who checked "other" as the prime source of information regarding sex-related physiology frequently wrote in that books were the source they utilized the most.

TABLE 9

Source of Sex Information by Sample in Percent

Source	Sample		
	Gallaudet	Towson	Loyola
Mother	2.90	21.30	24.20
Father	2.90	1.30	3.10
Brother(s)	0.00	0.00	2.30
Sister(s)	0.00	1.30	1.60
Friends	52.90	36.00	34.40
Teachers	41.20	26.70	24.20
Other	0.00	5.30	3.90

TABLE 10

Source of Sex Information by Audiology in Percent

	Audiological Group	
Source	Deaf	Hearing
Mother	2.90	23.30
Father	2.90	2.50
Brother(s)	0.00	1.50
Sister(s)	0.00	1.50
Friends	52.90	34.70
Teachers	41.20	25.20
Other	0.00	4.50

Materials

Problems were encountered when trying to locate an instrument which would accurately assess the sex knowledge of deaf students. The deaf freshman at Gallaudet in the previous pilot study by Swartz (1990) had an average reading level slightly below that of the seventh (7th) grade. This posed significant problems in using an existing instrument, such as the Sexual Knowledge and Attitude Test (SKAT) by Lief and Reed (1979). The language level of their questionnaire was deemed too difficult for the average Gallaudet freshman by Edelin (1989). This was not the only problem with the SKAT, for it also examined attitudes and behaviors, independent variables which are not being examined here in this research. Additionally, there are no available reports on the validity and reliability of the SKAT.

The only other instrument which would have been feasible for the assessment of sex knowledge was Acthzehn's (1981). This was also deemed unsatisfactory because it was very superficial, was presented in both written and video format, and Achtzehn believed his instrument was not usable. In an interview with Acthzehn (1990), the validity of his instrument was discussed. Acthzehn acknowledged the weakness of his written and video questionnaires, stating that he

wished a more appropriate instrument could be developed for the deaf population.

A questionnaire developed by Swartz (1990), the Sex Knowledge Inventory (SKI), was used to obtain background information and measure sex-related information knowledge of each subject in the study (see Appendix B). This questionnaire came about as the result of interviews with Achtzehn (1990), Edelin (1989, 1990), Kensicki (1990), and Meisegeier (1990), as well as in-depth examination of the SKAT.

Edelin is an assistant professor of psychology at Gallaudet University, having taught human sexuality for 17 years. The questionnaire used in this study (the SKI) was developed and adapted after examining Edelin's curriculum and gaining access to various examinations she had given her students in the past. Additionally, statements in the SKI were based upon the researcher's personal knowledge of myths that exist concerning sex information, as well as what were deemed to be important areas of sex knowledge. Refinements to the instrument were made after consultations with Edelin (1990).

Of major concern was the clarity of the language and the avoidance of statements that would be difficult for the deaf students to process cognitively. The SKI was reviewed for face and content validity by Kensicki

(1990), Chairperson of the English Department at Gallaudet, as well as Meisegeier (1990), Chair of the Honors Council, the Council that ultimately approved the SKI and accepted the resulting Senior Honors Thesis (Swartz, 1990). They found the language to be at a satisfactory level so as to avoid extraneous or confounding variables that were language-related. Readability and avoidance of ambiguous questions were of prime concern in the development of this SKI, with special focus placed on reading level-appropriate linguistic construction and design.

A panel of four experts at Gallaudet University, Dr. H. Neil Reynolds (Chair of Psychology, hearing), Dr. Mary Malzkuhn (professor of American government, deaf), Dr. Nancy Kensicki (Chair of English, deaf), and Dr. Janice Mitchell (Chair of Foreign Language, hearing), were selected to examine both the SKAT and SKI for readability. They all found the SKI better than or equal to the SKAT with regard to overall readability.

Additionally, the Flesch-Kincaid Reading Test (Wampler, 1991) was used to examine the readability of both the SKI and SKAT. Results showed that the SKI obtained a Flesch-Kincaid Grade Level of 6, while the SKAT obtained a Flesch-Kincaid Grade Level of 7. While the difference is only one grade level, the SKI may be

more suitable for the Gallaudet freshmen considering the entering class of 1991 has a reading grade level mean of 6 (Willis, 1991).

The SKI consists of four sections: demographics, true/false, matching, and labelling. The demographics section is designed to establish: gender, age, race, religiosity, general audiology, extensive audiology for deaf subjects, educational background, communication background of deaf subjects, formal and informal sex education background, and sexual experience.

The true/false section consists of 54 items concerning: anatomy and physiology, reproduction, masturbation, birth control, homosexuality, AIDS, and sexual intercourse. The matching section of the SKI consists of 13 items based on the male and female reproduction anatomy. The labelling section is composed of 22 items which refer to pictures of the male and female reproduction system. All possible labels are listed on one side of the paper and the subjects choose from this list; they do not have to depend on recall of the vocabulary.

In the labelling and matching portions of the instrument, if the subject chooses not to respond to an item it will be tabulated as an incorrect answer. In the true/false section if the subject chooses not to respond to the statement, that subject will not be

considered in the tabulation for true and false answers for that given statement. This method will be utilized because a subject, even though leaving a true/false statement blank, does not necessarily indicate that they would have gotten it wrong had they chosen to answer. As with any true/false "test" there is a 50% probability that the answer will be correct even if the subject does not know the answer.

For purposes of establishing content validity, and for this reason only, the SKAT was administered as well (Appendix B). Additionally, a consent form designed by the researcher was used for the subjects' informed consent (see Appendix C).

When Swartz used the SKI with the freshmen students at Gallaudet University and the University of Maryland (1990), the instrument demonstrated an overall reliability alpha coefficient (using Cochran's Analysis and Kuder-Richardson Formula 20) of .88 for the Gallaudet sample and .88 for the University of Maryland sample when considering one global score. Further testing of the instrument at Loyola College in 1990 by Swartz resulted in an obtained reliability alpha coefficient of .89. The Kuder-Richardson Formula 20 was used to measure the internal-consistency estimates of reliability of the true-false portion of the test, while the coefficient alpha was used to determine

internal-consistency estimates of reliability for the matching and labeling sections.

In the three sites where the SKI and SKAT were administered, i.e., Gallaudet University, Towson State University, and Loyola College, subjects were recruited using a sign up sheet (see Appendix A). At each institution, a testing room was set-up and used in the following manner: tables were placed in the room for the subjects to sit at while completing the instruments. The researcher was seated at a table partitioned off from the remainder of the room using movable partition extending past the entrance to the room, thus preventing persons outside the room or those entering the room from seeing the subjects seated at the table, and minimizing visual and auditory noise or distractions. A box was placed at the edge of the examiners table in which all completed forms were to be placed by the subjects. All forms used in the administration of the questionnaires were placed on the examiner's table. Completed SKI and SKAT forms, with correct answers marked (see Appendix B), were made available to all subjects during the debriefing session (see Appendix E).

Procedure

All potential subjects were recruited from Introduction to Psychology courses at the three institutions included in this study. They were instructed to sign up to complete the questionnaires, and extra or course credit were given by the professor for completion of this task.

Administration of the questionnaires was done on one day only at each of the three sites between the hours of 9 A.M. and 4 P.M., sequentially. When the students came to the room they were given the "General Instructions" and "Consent" forms. The subjects were told to take these papers beyond the partition and sit down, read the instructions, and sign the consent form. The instruction sheet (see Appendix D) further instructed the students to read the consent form, sign the consent form, and to bring it back to the examiner's table where they received the questionnaires. If subjects had a vision problem they were instructed to inform the examiner. Any subject who had a vision problem was given a large-print version of the questionnaire.

Both questionnaires were handed to the subject at the same time but the order for completion of each employed counterbalancing. The researcher was present during the entire time that the room was reserved and

the questionnaires were being administered, mainly to supervise their completion and to answer any questions posed by the subjects. When the subjects completed the questionnaires they were instructed to return to the examiner's table and place the completed questionnaires in the box on the examiner's table. It was ascertained at that time that the subjects had both questionnaires paper-clipped together. The subjects were handed a letter instructing them as to the time and place of the debriefing, as well as the investigator's address and phone number in the event that they had any questions or were unable to attend the debriefing. They were then thanked for their participation at which time they left the room.

One debriefing was held at each college in which the nature of the research was explained. Additionally, copies of the SKI and SKAT, with the correct answers marked, were distributed. The investigator answered any questions posed by those who had participated.

After administration of the questionnaires was completed at each site, the questionnaires were taken out of the box and assigned a code that correlated to the test site (Gallaudet: GAL, Towson State University: TSU, and Loyola College: LOY) and a subject number.

Design

Because the nature of this research is quasi-experimental, using data from a survey instrument to measure differences between subject groups, a strictly controlled experimental design was not feasible. The type of data comparison design used is a "between subjects" model. The dependent variable is knowledge of sex-related information as measured by the combined percent of correct answers given in the true/false, matching, and labeling sections.

The primary independent variable is hearing status of subjects (deaf vs. hearing). Comparisons were made between the two normal hearing subject groups and the deaf subject group based upon responses of these groups to the instrument items. The statements in the first part of the SKI, the background section which deals primarily with demographical data, consists of questions related to gender, religiosity, prior formal sex education, sexual experience, and educational level of the parents. The second portion of the SKI which focuses upon sex knowledge was grouped into sections for purposes of clarity: anatomy and physiology, AIDS, homosexuality, birth control, reproduction, masturbation, and sexual intercourse. The plan for the analysis of the data for this study was to conduct a preliminary ANOVA to identify which demographic

variables were significantly related to the dependent variable of sex knowledge. Then an ANOVA was performed between the hearing and deaf groups, the hearing groups of Loyola and Towson being collapsed into one group. Any demographic variables that have been identified as significant functioned as covariates in this ANOVA.

Reliability was measured using the coefficient alpha. Cochran's Analysis and Kuder-Richardson Formula 20 was used in determining the coefficient alpha, dependent upon whether the data was dichotomous or not.

As previously mentioned, Acthzehn (1990) stated that the SKAT was an inappropriate inventory to use in assessing the sex knowledge of the deaf population in general, and more specifically that of deaf freshmen. Edelin (1990) and Kensicki (1990) also brought into question the content validity of the SKAT in assessing sex knowledge of the Deaf. Their belief, as stated previously, was that the language was ambiguous and the reading level well above that of the average deaf college freshmen. Therefore, Achtzehn, Edelin, and Kensicki have deemed the SKAT an invalid test to use in measuring sex knowledge of the deaf population and deaf freshmen.

It was for this reason that Swartz (1990) developed the SKI, an instrument used in his prior research and used again here. Edelin (1989) examined

the SKI and deemed that its content was more than sufficient in assessing sex knowledge, and actually more thorough than the SKAT, which examines the additional dependent variable of sex-related attitudes. Because the SKAT is widely accepted as a content-valid instrument in assessing sex knowledge, it follows that Swartz's SKI meets the litmus test of content validity. Bass (1991) examined the content and face validity of the SKI and found it satisfactory (see Appendix B). Therefore, the content validity of the SKI has been established, thus partially satisfying the hypothesis that the SKI is a valid instrument.

Factor validity was examined by performing factorial analyses using varimax rotation. Strength of items in each matrix was determined by comparing the Eigenvalue with regard to the alpha coefficient.

Chapter III

Results

The results of questions on the SKI gauged to measure sex-related information knowledge of anatomy and physiology, AIDS, homosexuality, birth control, reproduction, masturbation, and sexual intercourse are presented in this section. Tabulations of answers to each question were made for Gallaudet University, Towson State University, and Loyola College subjects.

Composite scores were calculated for each subject, with a final cumulative composite score for all questions answered for both the SKI and the SKAT determined. In the labelling and matching portions of the questionnaire if the subject chose not to respond it was tabulated as an incorrect answer. In the true/false section if the subject chose not to respond to the statement that subject was not considered in the tabulation for true and false answers for that given question. This method was utilized because a subject, even though leaving a true/false statement blank, does not necessarily indicate that they would have gotten it wrong had they chosen to answer. As with any true/false "test" there is a 50% probability that the answer will be correct even if the subject does not know the answer.

An examination of the sample data revealed that the normality existed within all groups (Loyola, Gallaudet, and Towson), with the possible exception of Gallaudet. The Gallaudet sample was small (n=38) in comparison to the Loyola (n=128) and Towson (n=75) samples, and the small size of the Gallaudet sample indicated that bell-curved distribution of data might not be the case. Normality was examined within all groups in consideration of various variables. This determined which tests of significance would be used to test the hypotheses of this research, whether it be the ANOVA or Kruskal-Wallis, or combination and comparison of both.

Identified variables to be examined were the relationship between the education of the subjects' father, the gender of the subject, and race of the subject, all as they related to the overall performance on the SKI as determined by a composite score.

The kurtosis for the Loyola, Gallaudet, and Towson data, when examining the variable of SKI composite, was Ku=-.653, Ku=-1.295, and Ku=-.572, respectively. Examining the same variable of race, the skewness for data from Loyola, Gallaudet, and Towson was SK=-.030, SK=.213, and SK=-.144, respectively. The standard deviation for data from Loyola, Gallaudet, and Towson, while examining the same variable subject race, was

SK=.049, SK=.068, and SK=.050, respectively. Normality must be brought into question here with regard to the Gallaudet data collected in consideration of the race of the subject; the kurtosis was inordinately high in comparison (Ku=-1.295).

The kurtosis for the Loyola, Gallaudet, and Towson data, when examining the father's education, was Ku=-.243, Ku=-.956, and Ku=-.521, respectively. Examining the same variable per the father's education, the skewness for data from Loyola, Gallaudet, and Towson was SK=.014, SK=.439, and SK=.194, respectively. The standard deviation for data from Loyola, Gallaudet, and Towson, while examining the same variable father's education, was SD=1.365, SD=1.441, and SD=1.368, respectively. With regard to the above descriptive statistical information, the tenets for normality were met.

The kurtosis for the Loyola, Gallaudet, and Towson data, when examining the gender of the subject, was Ku=.822, Ku=-.956, and Ku=-2.102, respectively. Examining the same variable gender, the skewness for data from Loyola, Gallaudet, and Towson was SK=1.676, SK=.110, and SK=1.333, respectively. The standard deviation for data from Loyola, Gallaudet, and Towson, while examining the same variable of subject gender, was SD=.387, SD=.506, and SD=.421, respectively.

Normality must be brought into question here with regard to the Towson data collected in consideration of the gender of subject; the kurtosis was inordinately high in comparison (Ku=-2.102).

The kurtosis for the Loyola, Gallaudet, and Towson data, when examining the race of the subject, was Ku=18.423, Ku=5.625, and Ku=14.803, respectively. Examining the same variable race, the skewness for data from Loyola, Gallaudet, and Towson was SK=4.237, SK=2.50, SK=3.386, respectively. The standard deviation for data from Loyola, Gallaudet, and Towson, while examining the same variable of subject race, was SD=.510, SD=1.224, and SD=.485, respectively. Normality must be brought into question here with regard to the data collected in consideration of the race of subject; this is not a representative cross-section of races, but rather samples heavily weighted with caucasian subjects.

An ANOVA was performed on the resulting data from the SKI for the three sample populations, collapsing the two hearing samples (Towson and Loyola), and using a gross score which combined the True/False, Function, and Labelling sections. This revealed a very significant audiological effect, $F(1, 239) = 79.37$, $p < .001$.

The mean score for hearing subjects on the SKI was 80.00% correct, with SD=0.05. The mean score for deaf subjects on the SKI was 71.40% correct, with SD=0.07.

Bearing in mind the possibility that the data may not be reliably tested using parametric measures, the Kruskal-Wallis was used as an analysis of variance on ranks. With the SKI, $H = 39.61$, $p < .001$. This test showed, as did the ANOVA, that there exists a very significant audiological explanation of performance on the SKI.

In examining the SKAT composite score similar statistical analyses were performed. An examination of the sample data revealed that the normality existed within all groups: Loyola, Gallaudet, and Towson. The kurtosis for the Loyola, Gallaudet, and Towson data was Ku=.885, Ku=-.089, and Ku=.579, respectively. The skewness for data from Loyola, Gallaudet, and Towson was SK=-.207, SK=-.345, and SK=-.385, respectively. The standard deviation for data from Loyola, Gallaudet, and Towson was SD=.051, SD=.076, and SD=.046, respectively. This suggests an acceptable level of normality.

An ANOVA was performed on the resulting data from the SKAT for the three sample populations, collapsing the two hearing samples (Towson and Loyola), with the independent variable of gross score for the SKAT, which

combined the True/False, Function, and Labelling sections of the questionnaire. This revealed a very significant effect audiologically, $F(1, 239) = 76.41$, $p < .001$.

Again, bearing in mind the possibility that the data may not be reliably tested using parametric measures, the Kruskal-Wallis was used as an analysis of variance on ranks. With the SKAT, $H = 38.37$, $p < .001$. This test showed, as did the ANOVA, that there exists a very significant audiological explanation of performance on the SKAT.

A series of ANOVAs were performed examining various independent variables pertaining to demographic information collected in the background portion of the SKI. In all of these ANOVAs, the dependent variable was audiological status, with the collapsed samples of Towson State University and Loyola College comprising the hearing sample, and the Gallaudet University the deaf sample. All subsequent comparisons were made assuming these sample compositions. Independent variables examined were: sex of subject; whether or not the subject had a pre-college sex education course; father's education level; whether or not the parents discussed the "facts of life" with the subject; and the lapse in time between formal pre-college sex education

instruction and the subjects' present status as freshmen.

The first ANOVA, which examined sex of the subject, revealed $F(1, 239) = 2.02$, $p < .156$ for the SKI, and $F(1, 239) = 2.72$, $p < .100$ for the SKAT, which describes the differences as not significant, although possibly worth noting in the SKAT.

In examining the variable of whether or not the subject had a pre-college sex education course, $F(1, 233) = 2.94$, $p < .088$ for the SKI, and $F(1, 233) = 1.49$, $p < .224$ for the SKAT, not significant but possibly worth noting in the SKI.

Statistical tests performed to determine the influence of the subject's race on the resulting performance on the SKI revealed $F(5, 239) = 3.68$, $p < .003$ and $F(4, 238) = 2.71$, $p < .031$ for the SKAT, which interprets into a very significant difference for the SKI, and a significant difference for the SKAT. Caucasian subjects performed better on the SKI and SKAT than did African-American and other minority groups sampled.

The Kruskal-Wallis showed $H = 11.02$, $p < .026$ for the SKI, and $H = 9.60$, $p < .048$ for the SKAT. These showed that there exists a significant variance in gauging performance on the SKAT and SKI in terms of race.

Father's education of the subject was also seen as significant, $F(5, 232) = 3.54$, $p < .004$. On the SKAT significance was found with $F(5, 232) = 3.87$, $p < .002$. These show a very significant influence on the composite SKI and SKAT scores by the father's education. The Kruskal-Wallis showed $H = 15.02$, $p < .010$ for the SKI, and $H = 12.85$, $p < .025$ for the SKAT. These showed that there exists a very significant variance in gauging performance on the SKI in terms of father's education, and a significant variance on the SKAT.

Because the effects of the education level of the subject, and the race of the subject were determined as having a significant explanation of the variance on the composite score data collected on the SKI, an ANOVA was performed where the father's education considered as the main effect, with race acting as a covariate. This revealed $F(1, 232) = 14.94$, $p < .001$ for race, and $F(5, 232) = 3.30$, $p < .007$ for the main effect of father's education, very significant differences. As fathers' educational level went up, the subjects' performance on the SKI improved. These differences acknowledge the existence of contributing factors effecting the composite score outcome, namely race and father's education, but the variance of these two variables does not detract from the very significant

difference on the SKI composite score based solely on the populations' hearing status.

Similar consideration was given the SKAT, where the father's education was considered as the main effect, with race acting as a covariate. This revealed $F(1, 232) = 10.86$, $p < .001$ for race, and $F(5, 232) = 3.71$, $p < .003$ for the main effect of father's education, very significant differences. As father's educational level went up, the subject's performance on the SKAT improved. These differences acknowledge the existence of contributing factors effecting the composite score outcome, namely race and father's education, but the variance of these two variables does not detract from the very significant difference on the SKAT composite score based solely on the populations' hearing status.

Another variable which was examined, but was not originally anticipated as being a factor, was the age of the subjects with relation to the time elapsed since they had received formalized sex education in pre-college. This was deemed as a necessary variable to examine in consideration of the large differences between the mean ages of the hearing and deaf subjects. When considering the sex knowledge composite scores for both instruments, with audiological status as the main interaction and elapsed age since formal sex education

as the covariate. For the SKI the significance of the explained variance was determined as $F(1, 207) = 6.84$, $p < .010$ for the covariate, and $F(2, 207) = 52.47$, $p < .001$ for the main effect of audiological status. For the SKAT the significance of the explained variance was determined as $F(1, 207) = 14.21$, $p < .001$ for the covariate, and $F(5, 232) = 49.27$, $p < .001$ for the main effect of audiological status. Hearing subjects performed better on the SKI and SKAT than did deaf subjects. Both show very significant effects upon sex knowledge based upon audiological status alone with the covariance of elapsed age since formal sex education.

Factor validity was examined by performing factorial analyses using varimax rotation. Strength of items in each matrix were determined by comparing the Eigenvalue with regard to the alpha coefficient. Factor analyses were performed on both the SKI and SKAT to determine if the instruments would parse out into meaningful groupings of questions in terms of distinct areas of sex knowledge. These statistical analyses revealed that the instruments could not be separated into subsets along various sex knowledge disciplines contrary to the prediction of hypothesis 3: "Factor structure will be divided into anatomy and physiology, reproduction, masturbation, birth control, homosexuality, AIDS, and sexual intercourse.

Reliability was measured using the coefficient alpha. Cochran's Analysis and Kuder-Richardson Formula 20 was used in determining the coefficient alpha, dependent upon whether the data is dichotomous or not.

A reliability alpha of .82 was obtained for the SKI, supporting hypothesis 2: "Obtained reliability alpha coefficients for the SKI will demonstrate that the SKI has high internal reliability as an instrument."

Chapter IV

Discussion

The results of this survey have indicated an overwhelming difference between hearing college freshmen and deaf college freshmen in assessment of sex knowledge. For the most part it is obvious that accurate sex-related information is not reaching the deaf student with as great a frequency as the hearing student. The area of sex-related knowledge in which the deaf student showed the most deficiencies was anatomy and physiology, and area that encompassed at least 60% of the sex-related information portion of the survey. Because this is one of the only studies conducted thus far in this area, and the results being quite remarkable, with the only other previous (recent) study done by Swartz (1990) with similar findings, it is suggested that further examination is prudent in examining how this discrepancies in sex knowledge can be bridged and resolved. This study was admittedly broad in its scope and its intent was to give a general overview of the status of knowledge bases of sex-related information between hearing and deaf impaired college freshmen. The reasons for such disparity are many: lack of proper instruction in school with regard to anatomy and physiology; language limitations which may prohibit the deaf student from seeking out such

information from texts; the lexicon of sex-related information, especially anatomy, which must be fingerspelled rather than signed which possibly creates a barrier to comprehension and retention; the lack of auditory channels to gather information through everyday living experiences such as watching television, listening to peers that have access to accurate information; and the constraints that deaf subjects must face in public and mainstreamed classroom settings in which the may or may not be an interpreter, and the interpreter is not understood at an alarming rate; education in schools for the deaf where the predominant teaching force are normal hearing women who may have less than adequate signing skills; and the inability or hinderance of the family in discussing sex-related information with a hearing-impaired adolescent where communication has been reported to be mostly oral by the subjects in this study.

The results showed significant differences with regard to sex knowledge between the samples of hearing and deaf college freshmen tested. The hearing subjects performed better than the deaf subjects on the SKI and SKAT, as was hypothesized. A portion of these differences can be explained by variables other than audiology, such as the race of the subject, education level of their father, and elapsed time between formal,

pre-college sex education and the present. Still, while incorporating these variables as covariates, the results reflect a significant difference in sex knowledge purely along audiological lines.

The sample populations were nearly homogeneous with regard to race, composed mostly of Caucasians, and female Caucasians more specifically. This was especially true of the Loyola sample, with more diversification found in the Towson sample. Although hearing status was a very significant determinant in the performance on the SKI and SKAT, the race of the subject had a significant bearing upon the subject's performance. This finding must be considered carefully in light of the lack of normality in data distribution. To further examine this finding the Kruskal-Wallis was performed, and although the degree of significance lowered, race was still found to explain a significant variance of performance on both the SKI and SKAT.

The education level of subjects' fathers was found to explain a significant amount of variance on SKI and SKAT performance, with no significance found in regard to the mother's education level. The higher the level of the father's education, the better the subjects performed on the SKI and SKAT.

It appears that the education of the father is a predictor for performance on at least these

instruments, with subjects appearing to be highly influenced by the success and advancement of their fathers in academia. The subjects may be emulating their fathers, and a certain amount of modeling may be transpiring within the family unit. Considering the lower education attainment of the fathers of deaf subjects, this trend seems to be cyclic.

As mentioned before, one variable examined was the age of the subjects combined with the age at which they had taken a pre-college sex education course, if taken at all. It was considered important to examine this variable due to the fact that the age of the deaf students (Gallaudet freshmen) was substantially higher than that of the hearing subjects (Towson State and Loyola freshmen). Additionally, this was a necessary variable to consider because the dependent variable being tested, sex knowledge, might be expected to deteriorate with correlation to the time since formal sex education.

The variable examined did show that lapsed time differences between the subjects did explain a significant portion of the variance, and that it was a contributing factor towards knowledge, or perhaps knowledge retention of sex information.

A further elaboration with regard to the subject's age is necessary, since there was so much difference

between the hearing and deaf samples. The mean age of the deaf subjects was 23.34 years, 5.05 years greater than the mean age of the hearing subjects. This translates into a significant difference in age, one that may suggest deterioration of sex knowledge (as previously elucidated), but also the possibility that the deaf student may mature later in terms of mental and cognitive abilities; they enter college at an older age.

Religiosity was not a significant variable in explaining variance in performance, but it should be noted that Loyola's sample pool was predominantly Catholic with more diversity within the Towson and Gallaudet samples. While reported religious preference did not have a bearing on the overall performance on either the SKI or SKAT, the exists the possibility that certain areas within the test instruments found strengths and weaknesses in terms of religiosity.

In terms of religiosity it is noted that Loyola's subjects reported less satisfaction with their pre-college sex education with regard to birth control, a subject that is controversial within the Catholic Church. In examining further the self-reported satisfaction of the subjects when asked about their pre-college sex education course, surprisingly the deaf subjects reported consistently higher satisfaction;

that their needs were met to a higher degree in nearly every area examined. This suggests that the deaf subjects have the belief that they are acquiring satisfactory sex knowledge, but this is not supported by this study.

The intent of this research was not to determine the degree of success the subjects would experience on the SKAT, but rather to use it an instrument of comparison and correlation. In terms of statistical significance along a wide spectrum of variables, the answers to the questions were tallied and considered in terms of their correlation to the SKI. The SKAT and SKI showed similar correlation with criterion variables in nearly every area that could be factor analyzed, even though the factor analysis proved to be an effective measure overall, with the SKI performing at a higher rate of reliability than the SKI in certain areas.

Because the SKI and SKAT were analyzed jointly by independent professionals as to their content validity (see Appendix B, Bass letter), and were determined to be comparable in testing and determining the level of sex knowledge, the SKI can be considered a valid test in assessing sex knowledge. Not only can this statement be made when the SKI is placed in direct comparison to the SKAT, but when evaluating the SKI

independently for face, construct, and content validity.

This is an important finding because it establishes the SKI as a valid instrument in psychological testing of sex knowledge, an area of research and assessment which has few instruments at its disposal. The SKAT is cited by Acthzehn (1981) and Swartz (1990) as being the only instrument used widely for assessing sex information. Swartz (1990) contends that the SKAT by nature is not an effective test for evaluating the exclusive area of sex knowledge; the title "Sex Knowledge and Attitude Test" correctly labels the instrument as one which assesses not only knowledge, but attitudes as well.

In terms of reliability, the SKI exposed similar results as the SKAT in various areas of sex knowledge. Although conversations with Lief (1991) yielded no reliability statistics, the SKAT has been shown to be widely accepted as the principle instrument in assessing sex knowledge (Achtzehn, 1981; and Grossman, 1972). The reliability was further established by Bass (1991) when he examined the SKAT and found it a plausible instrument in assessing at least a portion of sex knowledge. Bearing this in mind, and the resulting reliability coefficients with the SKI and SKAT, by comparison the SKI establishes its own reliability.

Factor analyses were performed on both the SKI and SKAT to determine if the instruments would parse out into meaningful groupings of questions in terms of distinct areas of sex knowledge. These statistical analyses revealed that the instruments could not be separated into subsets along various sex knowledge disciplines to a high degree of success. The pure homogeneous nature of the test instruments appeared to have made factor analysis difficult, with nearly all of the instruments content focusing upon anatomy and reproduction in one form or another.

Before concluding this discussion, it should be stated that the labelling portion of this section was the only part of the questionnaire which made use of diagrams, that is, it was highly visual in nature. An argument might made that the section which was language-based, where the subject was required to correctly match terminology with function, may have been too difficult linguistically for the hearing-impaired subjects, thereby influencing the results. The resulting data did not show significant differences in terms of performance on the visual when compared to the language-based sections. It should be cause for concern that the deaf subjects performed so poorly in this area, especially in view of the attitudes of the deaf subjects regarding the adequacy of their formal

sex education in anatomy and physiology. Caution must be exercised here because this self-reported satisfaction with pre-college sex education is a subjective area, one which is very difficult to measure.

It is obvious that anatomy and physiology comprised most of the questionnaire and where the greatest emphasis was placed. With this in mind, the results from this section should be more significant. In nearly every portion of sexual education, anatomy and physiology must be discussed to a certain degree, whether the pre-college teacher is discussing their own bodies, the reproduction process, or the process of giving birth (labor).

Such disparities in this section should probably be taken more seriously than those questions dealing with other areas because more weight was given to anatomy and physiology by the nature of the questionnaire.

When teaching reproduction it would seem logical that anatomy and physiology would be discussed simultaneously. While background questions asking the subjects to rate whether or not they had received sufficient information in various aspects of sex education is very subjective, the results show that Gallaudet subjects tended to overrate their level of

knowledge while Towson State University and Loyola College students tended to underrate their knowledge, at least in comparison with Gallaudet students.

An explanation of the significant differences found in terms of performance on the SKI (and SKAT) may be explained by myths within the Deaf Community (Swartz, 1990). Some myths that are maintained by deaf subjects are more than likely the result of communication only among peers and a lack of communication with parents, most of whom are hearing. It is also possible that the deaf students simply are not being taught the subject matter in formal sex education courses, which would dispel such myths. All of the Gallaudet subjects in this study had either a severe or profound hearing loss, with no subject being able to be truly classified as hard-of-hearing. Considering that most Gallaudet subjects reported that their most frequent mode of communication with their family was oral, and that the majority of this sample was severely to profoundly deaf, it is feasible to conclude that sex-related information is not being supplied by the family to the deaf adolescent at a satisfactory level.

Deaf subjects reported that they relied more on their friends in acquired sex-related information, with few seeking the information from their nuclear family

(parents in particular). The lack of dependency upon parents was even greater than that found in Swartz's original study (1990); communication does not appear to be improving within the family of the deaf subject.

Dependency upon friends for sex knowledge may be adequate if the information is correct. As demonstrated by this study, the knowledge which the deaf subjects have is lacking when compared to hearing subjects. A continuance by deaf subjects of dependence upon deaf peers for sex information only compounds the problem, especially if educators do not see fit to intervene, and the family is not educated in how to communicate effectively with their deaf sons and daughters.

Chapter V

Summary

Our society has struggled with the issue of sex education for decades, and while we can speculate that progress has been made, there is still much further to go. In the area of education, professionals are still caught in the struggle of whether it should be taught at all (Adame, 1985; David, 1985). In cases where sex education is being taught, there is not much effort made to assess its effectiveness (Achtzehn, 1981; Darabi, 1982; Grossman, 1972). We assume that if a teenage girl has not become pregnant then we are, to a great degree, successful.

The prime concern of this research was to assess the level of sex knowledge of a deaf sample and compare this to a hearing sample possessing similar characteristics. Only Grossman (1972) and Achtzehn (1981) have attempted to measure sex knowledge of deaf adolescents and young adults. The literature has shown that timely and accurate dissemination of sex information is most likely not transpiring (Grossman, 1972; and Swartz, 1990). With 2 million Americans who are profoundly deaf (Angier, 1991), and another 10 million who have hearing loss in varying degrees, we cannot consider this segment of our population an insignificant minority.

The deaf population has long been overlooked educationally, usually pigeon-holed into residential schools for the deaf in each of our 50 states. Unfortunately, the educational system believes it has accomplished much if it can graduate from high school a deaf child who is able to read and write at the fourth grade level and has basic math skills (Achtzehn, 1989). Sex education is not of paramount importance, of much less priority than it is for the hearing child (Fitz-Gerald & Fitz-Gerald, 1987). Researchers in the area of deafness have recognized the problem as a multi-faceted one stemming from unrealistic societal expectations or beliefs. An example is Fitz-Gerald and Fitz-Gerald's (1979a) extensive work with deaf children and the sex education they are or are not obtaining. They found that many educators believe that sex education of the deaf should be dealt with in the home, and that deaf individuals are not sexual beings and thus do not have a need to know. Unfortunately sex education for the Deaf is prioritized near the bottom in most schools' curricula.

The literature supports societal beliefs that sex education for the deaf child should be taught at home (Achtzehn, 1981; and Fitz-Gerald and Fitz-Gerald, 1979a). Swartz's (1990) research found that the majority of deaf adolescents have hearing parents

and, though they are profoundly deaf, rely on ineffective oral means to communicate at home. Previous research (Achtzehn, 1981; Grossman, 1972; and Swartz, 1990) identified weaknesses in the sex knowledge of the deaf population, and our ability to assess this knowledge. Therefore, the need was apparent to not only establish the level of sex knowledge among deaf adolescents compared with their hearing cohorts, but to see if a new instrument, the Sex Knowledge Inventory, or SKI (Swartz, 1990), was an effective means for assessing sex knowledge in the deaf population.

The results of this study have yielded support for the original hypotheses:

1. Hearing freshmen will demonstrate more sex knowledge than deaf freshmen. There will be a higher percent of correct answers for the true and false, labelling, and matching sections of the Sex Knowledge Inventory (SKI) among those college freshmen with hearing as compared with deaf college freshmen.

2. When examining the SKI for content reliability by sex education consultants, a satisfactory level of reliability was reported.

The hypothesis which read: "Factor structure will be divided into anatomy and physiology, reproduction, masturbation, birth control, homosexuality, AIDS, and

sexual intercourse" was not supported by this research, and examination of this problem has been given in the previous results and discussion sections.

Because this is one of the only studies conducted thus far in this area, and the results being quite remarkable, with the only other previous (recent) study done by Swartz (1990) with similar findings, it is suggested that further examination is prudent in examining how these discrepancies in sex knowledge can be bridged and resolved. The reasons for such disparity are many, ranging from language limitations to ineffective peer and familial interactions with regard to assessing sex knowledge.

The purpose of this research was to compare knowledge of sex-related information in samples of deaf and hearing college freshmen. Accurate information on human sexuality is essential in preventing sexual, psychological, and a variety of psycho-social behavioral problems and disorders. As a consequence, the proper and efficient dissemination of sex information to the adolescent, and, for that matter the pre-adolescent, is of paramount importance. Unfortunately, there is evidence available to suggest this dissemination is not occurring properly, particularly among deaf persons. The review of the literature revealed disparities that exist between the

deaf and hearing populations with regard to the acquisition of accurate and timely sex information.

Evident from the onset of the research was the sparse amount of material available in written form that examined sex knowledge within the deaf population. Much of the research that reported on the extent of sex knowledge among deaf individuals reflected a narrowness of perspective with little regard for the potential of the deaf adolescents' capacity to learn as effectively as their hearing counterparts. Prevalent throughout the sources found was a paternalistic attitude towards acquisition of such information, as well as a mindset promoting prescriptive linguistics as the answer to language obstacles.

Our society is currently in a period of critical public concern about issues involving sexuality (AIDS epidemic, the world's highest teenage pregnancy rate [Rice, 1987], abortion, etc.) made worse by the lack of complete and accurate sex knowledge. It is crucial that the entire population have access to accurate information, and that hearing loss not impede the acquisition of this information.

The results in of this study suggest that the sex education curricula that is now being offered to the deaf population needs to be re-evaluated. It is hoped that meaningful guidelines can be extracted from this

study by other researchers which will lead to further research into this area.

APPENDIX A

Subject Recruitment

August 1, 1991

Dr. Faith Gilroy
Psychology Department
Loyola College
4501 North Charles Street
Baltimore, Maryland 21201-2699

Dear Dr. Gilroy:

In conjunction with my Master's Thesis research work at Loyola College in Baltimore, I will be recruiting subjects at the beginning of the upcoming fall semester. Subjects must be enrolled in an introductory level psychology course and have freshman status.

This research, "A Comparative Study of Sex Knowledge Among Hearing and Deaf College Freshman," will be conducted at Loyola College, Towson State University, and Gallaudet University. A copy of the research proposal is enclosed. The research proposal has received the approval of your Human Subjects Review Board and/or Institutional Review Board (see enclosed).

The subjects who participate will complete two inventories: the Sex Knowledge Inventory (SKI) and the knowledge portion of the Sex Knowledge and Attitudes Test (SKAT), both of which are enclosed. Completion of both instruments will take approximately one hour. After completion the subjects will be debriefed.

I ask that you allow me to enter your freshman-level psychology classroom(s) to briefly explain the study and recruit subjects. During this time interested students will be required to sign a participation sheet and given instructions as to when and where the instruments will be administered. If this would not be convenient for you, then I would be happy to supply you with the necessary materials to sign up the students.

If participation in research is not a course requirement for your students then I hope you will consider offering extra credit for the student's completion of this research. You will be forwarded a roster of the names of all students in your class(es) who complete the study.

My goal is to recruit subjects on or as soon after September 3, 1991, as is possible. Please contact me at your earliest convenience to arrange for recruitment. I can be reached in the Washington, D.C. area at (301) 498-1588, and the Baltimore area at (301) 880-6935, or by mail at: 17 South Paula Street, Laurel, MD 20724. Thank you in advance.

Sincerely,

Daniel B. Swartz
Enclosures

College/University: Gallaudet **Professor:** _____
Course: _____ **Section:** _____

By signing/printing your name to this form you agree to participate in my Master's Thesis research on human sexuality.
Do not sign-up if you cannot come.

!!! EXTREMELY IMPORTANT !!!

Please report for the research as follows:

DATE: Monday, September 16, 1991
TIME: 5:00 PM - 9:00 PM (No one will be admitted after 8:00 PM!!!)
PLACE: HMB 222
DEBRIEFING: 9:00 PM, and will take about 15 minutes

PLEASE PRINT YOUR NAME BELOW (so I can read it)

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Dear Gallaudet University Research Participant:

Thank you for volunteering to participate in my Master's Thesis research, a study in human sexuality at Loyola College's Department of Psychology.

By signing your name to the sign-up sheet you are guaranteeing that you will show up for the research session. You will not be given course credit or extra credit if you do not complete the research session, which will take approximately 1 hour. Attendance will be taken and your professor will be informed as to whether or not you completed the research. All you need to bring with you is a couple of pencils.

A debriefing session will be offered immediately following the research portion. Please check with your professor to see whether they require you to attend the debriefing session.

Participation in this research is strictly on a voluntary basis. You should understand that although your participation in this study may not benefit you personally, you are making a contribution to a better scientific understanding of this important subject.

Before you come to the session I want to stress that you **will not** be asked to give your name on any form that you complete, so you should have complete confidence that **your information will remain anonymous**.

There will be explicit questions regarding human anatomy and sexual/reproductive processes. It is critical that you answer all questions during the session as truthfully and accurately as possible. Any background information on yourself that is inaccurate will have a negative effect on the validity of the results.

!!! EXTREMELY IMPORTANT !!!

Please report for the research as follows:

DATE:	**Monday, September 16, 1991**
TIME:	**5:00 PM - 9:00 PM (No one will be admitted after 8:00 PM!!!)**
PLACE:	**HMB 222**
DEBRIEFING:	**9:00 PM, and will take about 15 minutes**

Sincerely,

Daniel B. Swartz
Principal Investigator

College/University: Loyola Professor:_____
Course:_____ Section:_____

By signing/printing your name to this form you agree to participate in my Master's Thesis research on human sexuality. **Do not sign-up if you cannot come.**

!!! EXTREMELY IMPORTANT !!!

Please report for the research as follows:

DATE: Monday, September 23, 1991
TIME: 5:00 PM - 9:00 PM (No one will be admitted after 8:00 PM!!!)
PLACE: Beatty 19
DEBRIEFING: 9:00 PM, and will take about 15 minutes

PLEASE PRINT YOUR NAME BELOW (so I can read it)

Dear Loyola College Research Participant:

Thank you for volunteering to participate in my Master's Thesis research, a study in human sexuality at Loyola College's Department of Psychology.

By signing your name to the sign-up sheet you are guaranteeing that you will show up for the research session. You will not be given course credit or extra credit if you do not complete the research session, which will take approximately 1 hour. Attendance will be taken and your professor will be informed as to whether or not you completed the research. All you need to bring with you is a couple of pencils.

A debriefing session will be offered immediately following the research portion. Please check with your professor to see whether they require you to attend the debriefing session.

Participation in this research is strictly on a voluntary basis. You should understand that although your participation in this study may not benefit you personally, you are making a contribution to a better scientific understanding of this important subject.

Before you come to the session I want to stress that you **will not** be asked to give your name on any form that you complete, so you should have complete confidence that **your information will remain anonymous**.

There will be explicit questions regarding human anatomy and sexual/reproductive processes. It is critical that you answer all questions during the session as truthfully and accurately as possible. Any background information on yourself that is inaccurate will have a negative effect on the validity of the results.

!!! EXTREMELY IMPORTANT !!!

Please report for the research as follows:

DATE:	**Monday, October 23, 1991**
TIME:	**5:00 PM - 9:00 PM (No one will be admitted after 8:00 PM!!!)**
PLACE:	**Beatty 19**
DEBRIEFING:	**9:00 PM, and will take about 15 minutes**

Sincerely,

Daniel B. Swartz
Principal Investigator

College/University: Towson State **Professor:**_____
Course:_____ **Section:**_____

By signing/printing your name to this form you agree to participate in my Master's Thesis research on human sexuality. **Do not sign-up if you cannot come.**

!!! EXTREMELY IMPORTANT !!!

Please report for the research as follows:

DATE: **Monday, September 30, 1991**
TIME: **5:00 PM - 9:00 PM (No one will be admitted after 8:00 PM!!!)**
PLACE: **Psychology 316**
DEBRIEFING: **9:00 PM, and will take about 15 minutes**

PLEASE PRINT YOUR NAME BELOW (so I can read it)

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Dear Towson State University Research Participant:

Thank you for volunteering to participate in my Master's Thesis research, a study in human sexuality at Loyola College's Department of Psychology.

By signing your name to the sign-up sheet you are guaranteeing that you will show up for the research session. You will not be given course credit or extra credit if you do not complete the research session, which will take approximately 1 hour. Attendance will be taken and your professor will be informed as to whether or not you completed the research. All you need to bring with you is a couple of pencils.

A debriefing session will be offered immediately following the research portion. Please check with your professor to see whether they require you to attend the debriefing session.

Participation in this research is strictly on a voluntary basis. You should understand that although your participation in this study may not benefit you personally, you are making a contribution to a better scientific understanding of this important subject.

Before you come to the session I want to stress that you **will not** be asked to give your name on any form that you complete, so you should have complete confidence that **your information will remain anonymous**.

There will be explicit questions regarding human anatomy and sexual/reproductive processes. It is critical that you answer all questions during the session as truthfully and accurately as possible. Any background information on yourself that is inaccurate will have a negative effect on the validity of the results.

!!! EXTREMELY IMPORTANT !!!

Please report for the research as follows:

DATE:	**Monday, September 30, 1991**
TIME:	**5:00 PM - 9:00 PM (No one will be admitted after 8:00 PM!!!)**
PLACE:	**Psychology 316**
DEBRIEFING:	**9:00 PM, and will take about 15 minutes**

Sincerely,

Daniel B. Swartz
Principal Investigator

Appendix B

Instruments and Approvals

July 3, 1991

Dr. Barry Bass
Psychology Department
Towson State University
Towson, Maryland 21204

Dear Dr. Bass:

I called you earlier today but you were not in. I thought it best to just send this through the mail and then you could give me a call if you had any questions.

I am doing my Master's Thesis at Loyola College in the field of human sexuality ("A Comparative Study of Sex Knowledge Between Hearing and Deaf College Freshmen"). Dr. Charles Lo Presto sits on my Thesis Committee and he strongly suggested that I have one more expert in the field examine the instrument that I have developed, the Sex Knowledge Inventory (SKI), for content validity. Dr. Lo Presto said "...you were **the man** to judge content validity...", so here I am.

Previously I have had Dr. Larry Stewart, Dr. Horace Reynolds, and Miss Patricia Edelin of Gallaudet University, Washington, D.C., assess the SKI and they were satisfied with its content validity. This was done during 1989 while I was an undergraduate at Gallaudet and administered the SKI then for the first time.

I have enclosed a copy of the SKI, as well as the knowledge portions of the 1972 and 1990 versions of the Sex Knowledge and Attitudes Test (SKAT and SKAT-A). I am concerned with how the SKI stacks up against the SKAT and SKAT-A in the area of sex knowledge and the further assurance that it is indeed assessing sex knowledge as well or better than the SKAT or SKAT-A.

Thank you in advance for your time and if you have any questions please call me at (301) 880-6935.

Very truly yours,

Daniel B. Swartz

Enclosures

LOYOLA COLLEGE IN MARYLAND

July 11, 1991

Daniel B. Swartz
17 South Paula Street
Laurel, Maryland 20724

Dear Mr. Swartz:

After thorough examination of the Sexual Knowledge Inventory (SKI), I find it to have satisfactory face and content validity for the assessment of sex knowledge among college freshmen. Should you or your thesis committee have any questions, please contact me at 830-3072.

Sincerely,

Barry A. Bass

Dr. Barry Bass
Psychology Department
Towson State University
Towson, MD 21204

4501 North Charles Street
Baltimore, Maryland 21210-2699
301-323-1010

APPLICATION FOR APPROVAL OF INVESTIGATION
INVOLVING THE USE OF HUMAN SUBJECTS

PLEASE TYPE:

1. Principal Investigator's Name: Daniel B. Swartz

   Department & Campus Address: Psychology, Jenkins Hall Basement

   Campus Phone Number: 323-1010
   Home Number: 880-6935

   Co-investigator(s): None

2. If you are a student provide the following:

   Faculty Sponsor: Dr. Mickey Fenzel
   Extension: 2298

3. Title of project: Comparative Study of Sex Knowledge Between Hearing and Deaf College Freshmen

4. Total project period: From 11/19/90 - 5/31/92

5. Has this project been previously considered by the Human Subjects Research Committee?

   Yes _____ No xxxx

6. Is a proposal for external support being submitted?

   Yes _____ No xxxx

7. Description of human subjects:
   Number 200 Age 18-30 Male 100 Female 100

8. In your judgement does your research fall under one of the five exempt categories listed on pages 4 and 5 of the POLICIES AND PROCEDURES?

   Yes _____ No xxxx

   If you believe it does, indicate the number of the category under which you are claiming exemption.

   _____

   If you are claiming an exemption skip no. 9 and nos. 13-15.

9. Does your project fall under one of the categories eligible for expedited review as listed on pages 16-18 of the POLICIES AND PROCEDURES?

   Yes xxxx No_____

10. Describe the source(s) of subjects and the selection criteria. Specifically, where did you obtain the names of potential subjects (i.e., agency files, hospital records, local organizations, etc.)? Where and how will you contact them?

The potential subjects are intact groups who are or will be taking the course Introduction to Psychology. No other criteria is used for subject selection. They are contacted only through professors in the Psychology Department who have given permission to have their students participate in this research.

11. Procedures: Provide a step-by-step description of each procedure, including the frequency, duration and location of each procedure.

The subjects will be presented with the General Instructions and Consent Form. After they have signed the Consent Form they will be given the Sex Information Form to complete. This will occur only once, and the duration of the process will be 30-45 minutes. This will all take place in the professors' classroom.

12. Brief Description of proposed research: include major hypotheses and research design.

Research Hypothesis: Hearing subjects will have a higher rate of correct answers for all portions of the survey instrument as compared with hearing impaired and deaf subjects.

The research design is quasi-experimental, dealing with a survey instrument to measure differences between subject groups. The type of design is a between subjects design. The dependent variables are knowledge of sex-related information as measured by percent of correct answers given in all sections. The primary independent variable is hearing (audiological) status. Other independent variables will be based upon background information provided by the respondents in the first section of the survey instrument, including race, gender, religion, familial and educational background, and sexual experience. The survey instrument was designed by me and based upon my personal knowledge of myths that exist concerning sex information, as well as what I deemed to be important information areas in sex knowledge worthy of testing to gauge accuracy of knowledge.

13. Informed consent: Describe the consent process and attach all consent documents.

Subjects will sign a consent form prior to completing the survey instrument.

14. Benefits: Describe the anticipate benefits to subjects, and the importance of the knowledge that may reasonably be expected to result.

There are no direct benefits to the subject. However, results from this research will give educators of the hearing-impaired/deaf a broader knowledge base than already exists in disparities between the deaf and hearing populations with regard to sex knowledge. It has already been determined that deaf students are lagging with regard to language ability, and this transcends into other aspects of academia and general information areas. Sex information is a subject that should be treated on a "right to know" basis, not a "need to know" basis which has been used so often in residential schools for the deaf and schools where deaf students have been mainstreamed. The last empirical study done in this area was in 1973 by Grossman. As an alumnus of Gallaudet University, the only university in the world for deaf students, I am very cognizant of the deficiencies in deaf education. Additionally, it is hoped that this information can be shared with the larger population of educators of hearing students. By no means are hearing students expected to know everything, and area of weakness will be identified.

15. Risks: Describe the risks involved with these procedures (physical, psychological, and/or social) and the precautions you have taken to minimize these risks.

The only risk is one of anonymity, and this has been secured by not having any subject-identifiable information on the survey instrument.

LOYOLA COLLEGE IN MARYLAND

HUMAN SUBJECTS REVIEW COMMITTEE

PROPOSAL REVIEW

LOG # 214

PROJECT DIRECTOR: Daniel J. Swarts

FACULTY SPONSOR: (if student) Dr. Mickey Fenzel

PROJECT TITLE: Comparative Study of Sexual Knowledge Between Hearing and Deaf College Freshmen

HSRC REVIEWERS: Mark Pevrot - primary; Kathryn Copmann - secondary

RECOMMENDATION: (Primary and secondary reviewer: Please sign and return to William Billiter, Rm. M40, Millbrook House.)

✓ This proposal is approved as is under the expedited review process.

____ Additional information is required in order to evaluate this application. Note the comments provided in the attached Evaluation section.

____ This proposal does not qualify for approval under the expedited review process. Applicant should revise and resubmit the protocol in accord with the attached evaluation or should request a full committee review.

M. Pevrot 12/4/90
HSRC Reviewer Date

Kathryn L. Copmann 12-3-90
HSRC Reviewer Date

4501 North Charles Street
Baltimore, Maryland 21210-2699
301-323-1010

APPLICATION FOR APPROVAL OF RESEARCH INVOLVING
THE USE OF HUMAN PARTICIPANTS
TOWSON STATE UNIVERSITY

(Please type or print legibly. This form must be completed by the Principal Investigator for any research project that involves human participants. Please submit the original and eight copies of: 1) the completed application; 2) the informed consent form; and 3) all materials including instruments to be used. If you believe your research qualifies for "exempt" or "expedited review" status you need only submit one copy of the above. If, however, it must be reviewed by the IRB you will be asked to provide eight copies.

1. Principal Investigator: Daniel B. Swartz

Title of Research: Comparative Study of Sex Knowledge Between Hearing and Deaf College Freshmen

Period of Research: July 1, 1991 to June 30, 1992

Institution & Department: Loyola College in Maryland, Psychology Department

Department & Campus Address: Psychology Department, 4501 N. Charles St., Baltimore, MD 21210

Mailing Address: 17 South Paula Street, Laurel, MD 20724
Phone: 880-6935

Co-investigator(s): None

2. If you are a student provide the following:

Faculty Sponsor Name: Dr. Mickey Fenzel
Extension: 323-1010, X2298

Faculty Sponsor Signature (indicates approval):

_____ Date: _____

Purpose: Master's Thesis

3. Has this research project been previously considered by the IRB?

Yes_____ No___XXX___ Last approval date & PI's name: _____

(If this is a renewal application and there are no substantive changes in the project complete only through #5.)

4. If the research is funded, indicate the source:

External Agency Name: _____

Faculty Research Committee:_____

Faculty Department: _____

5. Check if the following is true:
Does the research involve:

_____children _____prisoners _____pregnant women
___XX__only the use of educational tests (cognitive, diagnostic, aptitude, or achievement)
_____only survey or interview procedures
___XX__procedures in which the anonymity of the participant will be insured
___XX__the participants being fully informed of the research project
___XX__voluntary participation by all participants
_____participation by random selection
_____information which would place the participant at risk of criminal or civil liability if it became known outside the research
___XX__information which deals with sensitive aspects of the participant's own behavior, such as illegal conduct, drug use, sexual behavior, or use of alcohol.
_____interviewing or surveying only elected or appointed public officials or candidates public office
_____observation of public behavior
_____the collection or study of existing data, documents, records or specimens

6. What is the objective of this study

There are no direct benefits to the subject. However, results from this research will give educators of the hearing-impaired/deaf a broader knowledge base than already exists in disparities between the deaf and hearing populations with regard to sexual knowledge. It has already been determined that deaf students are lagging with regard to language ability, and this transcends into other aspects of academia and general information areas. Sexual information is a subject that should be treated on a "right to know" basis, not a "need to know" basis which has been used so often in residential schools for the deaf and schools where deaf students have been mainstreamed. The last empirical study done in this area was in 1973 by Grossman. As an alumnus of Gallaudet University, the only university in the world for deaf students, I am very cognizant of the deficiencies in deaf education. Additionally, it is hoped that this information can be shared with the larger population of educators of hearing students. By no means are hearing students expected to know everything, and area of weakness will be identified.

7. What is the research design and what will be required of each subject

Research Hypothesis: Hearing subjects will have a higher rate of correct answers for all portions of the survey instruments as compared with hearing-impaired/deaf subjects. The research design is quasi-experimental, dealing with a survey instrument to measure differences between subject groups. The type of design is a between subjects design. The dependent variable is knowledge of sex-related information as measured by percent of correct answers given in all sections. The primary independent variable is hearing (audiological) status. Other independent variables will be based upon background information provided by the respondents in the first section of the survey instrument, including race, gender, religion, familial and educational background, and sexual experience. The survey instruments were designed by Daniel B. Swartz and Harold Lief and based upon knowledge of myths that exist concerning sexual information, as well as what was deemed to be important information areas in sexual knowledge worthy of testing to gauge accuracy of knowledge.

The subjects will be presented with the General Instructions and Consent Form. After they have signed the Consent Form they will be given the Sex Knowledge Inventory (SKI) and the Sex Knowledge and Attitudes Test (SKAT). Each subject will be tested once on each inventory measure. The duration of the process will be about 60 minutes.

8. How will participants be selected

The potential subjects are intact/convenience groups who are or will be taking the course "Introduction to Psychology." No other criteria is to be used for subject selection. They are contacted only through professors in the Psychology Department who have given permission to have their students participate in this research. The potential subjects will be contacted in the professors' classrooms and then directed to sign up for the testing. At that time they will be informed of the time and place of the testing, which will take place on the Towson State University campus.

9. Do you believe your research should be considered: exempt_____ or for expedited review__YES__; under research category number_____

10. What are the risks to the human participant (physiological, psychological)*

The only risk is one of anonymity, and this has been secured by not having any subject-identifiable information on the survey instrument.

11. How will the confidentiality of the participants be maintained

By not having any subject-identifiable information on the survey instrument.

12. Is there any information with regard to protocol or intention that will not be disclosed to the participant on the informed consent form: Is so, what is it.

They will not be told of the operational hypothesis.

13. What debriefing information will be given to the participants following their participation

There will be a debriefing session for all participants. At that time the nature of the study will be described. Additionally, the SKI and SKAT, with the correct answers marked, will be distributed.

14. Specify the participant characteristics required (age, sex, etc.) and the number of participants

Description of human subjects: Number 200, age 18-30, male-100, female-100, all college freshmen enrolled in "Introduction to Psychology" classes.

15. How will data be recorded and stored

Data will be collected via the SKI and SKAT instruments only. It will later be recorded on SPSSX and stored on floppy disks. The original completed instruments will be stored in the psychology department of Loyola College.

*"At Risk." A participant is considered to be at risk if the possibility of physical, psychological, sociological, or other types of harm may be the consequence of an activity which goes beyond the application of established and accepted methods necessary to meet the needs of the participant, or which increases the ordinary risks of daily life, including the recognized risks inherent in a chosen occupation or filed of service.

If your research is given exemption status, the following must be stated on a cover letter accompany any survey or questionnaire, on departmental letterhead:

1) A statement that participation is voluntary
2) A statement that what you are doing is research and the reason for such (i.e., classroom exercise, master's thesis, etc.)
3) Purpose of study - what you are investigating
4) A statement that the participants' responses will be kept confidential; explain if participant's name is to be reported or disclosed
5) A statement that participants do not have to answer every question
6) If students, class standing <u>will not be affected if they participate or choose not to participate</u> --if on a sports team, status will not be affected and the coach will not receive individual scores/responses

TOWSON
STATE UNIVERSITY
Towson, Maryland 21204-7097

Office of Research Administration
(301) 830-2236
FAX 301-296-8782

MEMORANDUM

TO: Daniel Swartz
FROM: Institutional Review Board for the Protection of Human Subjects, Lynn Johnson-Dean, Chairperson LJD/MCH
DATE: July 22, 1991
RE: Approval of Application for the Use of Human Subjects

Thank you for submitting your application for approval for the research titled "Comparative Study of Sex Knowledge Between Hearing and Deaf College Freshmen" to the Institutional Review Board for the Protection of Human Subject (IRB) at Towson State University.

Your research is exempt from general Human Subjects requirements according to 45 CFR 46.101 (b)(3). You do not therefore need to complete informed consent forms for your subjects.

Since your research has been given exemption status, the following must be stated on a cover letter accompanying any survey or questionnaire, on departmental letterhead:

1) A statement that participation is voluntary
2) A statement that what you are doing is research and the reason for such (i.e., classroom exercise, masters thesis, etc.)
3) Purpose of the study - what you are investigating
4) A statement that the participants' responses will be kept confidential; explain if participants' name is to be reported or disclosed
5) A statement that participants do not have to answer every question
6) If students a statement that their class standing will not be affected if they participate or choose not to participate, or if on a sports team, status will not be affected and the coach will not receive individual scores/responses

If you substantially change your research project or your survey instruments would you please notify the IRB.

We wish you every success in your research project.

cc: File

June 26, 1989

Institutional Review Board
College Hall
Gallaudet University
800 Florida Avenue, N.E.
Washington, D.C. 20002

Attention: Dr. Kathleen Arnos, Chair

Dear Sir or Madam:

Enclosed you will find the completed application for review of my study entitled "Sex-Related Information." Attached are five (5) copies of the questionnaire and Informed Consent Form to be used in this research.

This research is the preliminary phase of investigative work for my University Honors Senior Thesis, and will focus on disparities between deaf and hearing samples with regard to accurate (and inaccurate) sex information knowledge. For a more precise definition of the aims and expectations of this research please see the enclosed Abstract.

I expect to sample approximately 40 hearing-impaired freshman from Gallaudet University and 40 hearing freshman from an area college or university. The questionnaire will be administered to groups in a classroom setting. As stressed in the Consent Form and the cover letter of the questionnaire, complete anonymity will be maintained. Consent Forms and questionnaires shall remain separate, removing the possibility of identification by me or other individuals involved with this study.

Should you have any questions concerning this proposal do not hesitate to contact me on campus at the Psychology Department (x5540). Thank you for your consideration.

Sincerely,

Daniel B. Swartz
Investigator

Attachments/Enclosures
cc: Dr. H.N. Reynolds, Chair of Psychology
Ms. Patricia Edelin

Gallaudet University
Institutional Review Board
Research Proposal Review

IRB Number _____
Date Received _____
Date Review Completed _____

1. Project title *Sexual Information*

2. Principal investigator: Last name *Swartz*
   First name *Daniel*

3. Department/Unit *Psychology*

4. Campus address *Psychology Department, HMB 256A*

5. Campus phone *x5540*

6. Funding source *N/A*

7. Amount of funding *NONE*

8. Project period (month/year) *July / 89* to *Dec. / 89*

9. Type of review requested *C*

   (A) Exempt (B) Expedited (C) Full (D) Other

10. Status of review *A*

    (A) New (B) Revised/Modified (C) Renewal/Continuation
    (D) Finished (E) Other

Please attach a copy of your proposal, a description of your experimental protocol, or an abstract. In addition, please attach a copy of the informed consent form you intend to use.

Certification

I certify that to the best of my knowledge the above information is correct.

Principal Investigator: *Daniel B. Swartz*
Print name

_____
Signature

Budget Unit Head or equivalent: *Dr. H.N. Reynolds (7550)*
Print name Tel/TDD

_____
Signature

for student researchers: Faculty Supervisor: *Dr. H.N. Reynolds (7550)*
Print name Tel/TDD

_____
Signature

GALLAUDET UNIVERSITY

GALLAUDET RESEARCH INSTITUTE
GENETIC SERVICES CENTER
(202) 651-5258

KENDALL GREEN
800 FLORIDA AVENUE, N.E.
WASHINGTON, D.C. 20002

July 27, 1989

MEMORANDUM

TO: Mr. Daniel B. Swartz

FROM: Dr. Kathleen Shaver Arnos, Chairperson KSA
Institutional Review Board

RE: Sex-Related Information Study

The Institutional Review Board (IRB) of Gallaudet University has approved your research project as submitted after a full board review.

The IRB considers only the issue of research risk to subjects; approval is solely a declaration of the absence of, or adequate control of, research risk. Further, approval implies neither quality of the research nor guarantee of access to any of the subjects proposed in the research project.

Please notify the Board if your research project changes in the way human subjects are utilized. This approval is effective through July 27, 1990.

Good luck with your study!

January 5, 1991

Dr. Kathleen Arnos
Institutional Review Board
Gallaudet University
800 Florida Avenue N.E.
Washington, D.C. 20002

Reference: Extension for administration of questionnaire

Dear Dr. Arnos:

I request that IRB approval for my questionnaire concerning knowledge of sex information be extended. I have enclosed a copy of the questionnaire which was administered during the Spring of 1990 under previous approval of your Board.

If there are forms that I must complete in order to facilitate this extension, please forward them to me at your earliest convenience:

Daniel B. Swartz
17 South Paula Street
Laurel, Maryland 20724
(301) 498-1588 (V/TTY)

Thank you in advance for your timely attention to this matter.

Very truly yours,

Daniel B. Swartz

cc: Dr. Mickey Fenzel, Loyola College, Thesis Major Reader

GALLAUDET UNIVERSITY

GALLAUDET RESEARCH INSTITUTE
GENETIC SERVICES CENTER
(202) 651-5258

KENDALL GREEN
800 FLORIDA AVENUE, N.E.
WASHINGTON, D.C. 20002

January 14, 1991

Mr. Daniel B. Swartz
17 South Paula Street
Laurel, MD 20724

Dear Mr. Swartz:

At your request, the Gallaudet Institutional Review Board (IRB) has approved a renewal of the approval for your research project "Sex-Related Information Study."

The IRB considers only the issue of research risk to subjects; approval is solely a declaration of the absence of, or adequate control of, research risk. Approval does not guarantee either the quality of the research or access to subjects.

Please notify the Board if your research project changes in the way human subjects are utilized. The attached form should be used to report changes, completion of the project, or unexpected harm to subjects. Researchers are also required by federal regulations to have yearly renewal of the IRB approval for continuing projects. Please make timely submission of requests for renewal or prompt notification of project termination. The current approval is effective through January 14, 1992.

Sincerely,

Kathleen S Arnos

Kathleen Shaver Arnos, Ph.D.
Chair, Institutional Review Board

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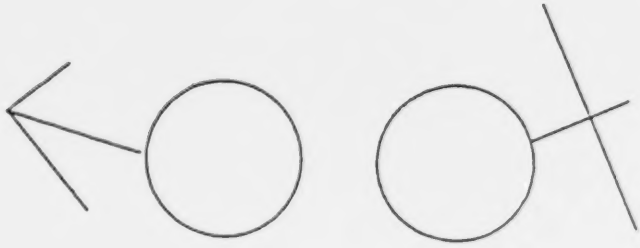

SEX KNOWLEDGE INVENTORY (SKI)

P.O. Box 2812
Laurel, Maryland 20709

Daniel B. Swartz

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THIS INSTRUMENT, OR ANY PARTS THEREOF, MAY NOT BE REPRODUCED
IN ANY FORM WITHOUT PERMISSION OF THE AUTHOR.

SEX KNOWLEDGE INVENTORY (SKI)

Section I: Background

[PART A]

Please place a check mark [ ] next to the appropriate information, where applicable.

>>>> **Sex:** Female _____ (1) Male _____ (2)

>>>> **Age:** _____ years old (3)

>>>> **Race:** Caucasian _____ (4) Black _____ (5)

Hispanic _____ (6) Asian _____ (7)

American Indian _____ (8) _____ _____ (9)
Other (Specify)

>>>> **Parental:**

Your father is (check one): Living ____ (10) Deceased _____ (11)

If DECEASED, how old were you when he died? _____ (12)

Your father's highest level of education: **(Check only one)**

Less than H.S. Diploma _____ (13) H.S. Diploma _____ (14)
Some College _____ (15) Bachelor's Degree _____ (16)
Master's _____ (17) Ph.D. _____ (18) Post-Doctoral _____ (19)

Your mother is (check one): Living ____ (20) Deceased _____ (21)

If DECEASED, how old were you when she died? _____ (22)

Your mother's highest level of education: **(Check only one)**

Less than H.S. Diploma _____ (23) H.S. Diploma _____ (24)
Some College _____ (25) Bachelor's Degree _____ (26)
Master's _____ (27) Ph.D. _____ (28) Post-Doctoral _____ (29)

>>>> **Religion:** Catholic _____ (30) Protestant _____ (31)

Jewish _____ (32) Mormon _____ (33) Other _____ (34)

>>>> **Marital Status:** Single _____ (35) Married _____ (36)

>>>> **College Class:** Freshman _____ (37) Sophomore _____ (38)

Junior _____ (39) Senior _____ (40)

>>>> **Audiology:** Hearing ____ (41) Deaf/Hard-of-Hearing ____ (42)

>>>> **ANSWER ONLY IF YOU ARE HEARING:**
Your pre-college education was: **(Check all that apply)**

Public School _____ (43) Private School _____ (44)

_____ _____ (45)
Other (Specify)

STOP * * * * STOP * * * * * STOP * * * * * STOP * * * * STOP
IF YOU ARE HEARING GO TO [PART C] ON PAGE 4.
IF YOU ARE DEAF/HARD-OF-HEARING, CONTINUE WITH [PART B]

[PART B]

Answer these questions ONLY if you are DEAF/HARD-OF-HEARING.

>>>> At what age did your hearing loss occur? _____ years (46)

>>>> At what age did you first learn sign language?___years (47)

>>>> What is your hearing loss unaided?

Left Ear _____db (48) Right _____db (49)

>>>> Do you wear a hearing aid or aids?

YES _____ (50) NO _____ (51)

>>>> Your pre-college education was: **(Check all that apply and the grades that you attended)**

(52) ____ Residential School for the Deaf
Grades Attended: _____ thru _____ (52A)

(53) ____ Day Program School for the Deaf
Grades Attended: _____ thru _____ (53A)

(54) ____ Regular Public School
Grades Attended: _____ thru _____ (54A)

(55) ____ Regular Public School with Mainstreaming
Grades Attended: _____ thru _____ (55A)

(56) ____ Regular Public School with Special Class
(with all deaf students)
Grades Attended: _____ thru _____ (56A)

(57) ____ Private School
Grades Attended: _____ thru _____ (57A)

(58) ____ _____
(Other - please specify)
Grades Attended: _____ thru _____ (58A)

>>>> **When living at home, which mode of communication do you use most with your family? (Check one only)**

American Sign Language ____ (59) Pidgin Signed English ____ (60)

Signed English _____ (61) Oral/Voice/Lipreading _____ (62)

_____ _____ (63)
Other (Specify)

>>>> Who else in your family is deaf/hard-of-hearing?
(Check all that apply)

Mother _____ (64) Father _____ (65) Brother(s) _____ (66)

Sister(s) _____ (67) _____ _____ (68)
Other (Specify)

>>>> Were you allowed to use sign language in the classroom (Pre-college, kindergarten through high school)?

ALWAYS _____ (69) SOMETIMES _____ (70) NEVER _____ (71)

>>>> If you answered **SOMETIMES** to the previous question, place a checkmark ( ) next to the grade(s) below where you were NOT allowed to use sign language?

Kindergarten ____ (72) 1st Grade ____ (73) 2nd Grade ____ (74)
3rd Grade ____ (75) 4th Grade ____ (76) 5th Grade ____ (77)
6th Grade ____ (78) 7th Grade ____ (79) 8th Grade ____ (80)
9th Grade ____ (81) 10th Grade ____ (82) 11th Grade ____ (83)
12th Grade ____ (84)

>>>> If you did not attend a school for the deaf, did you have an interpreter in the classroom?

ALWAYS _____ (85) SOMETIMES _____ (86) NEVER _____ (87)

>>>> If you answered **ALWAYS** OR **SOMETIMES** to the previous question, did you understand the interpreter?

ALWAYS _____ (88) SOMETIMES _____ (89) NEVER _____ (90)

>>>> If you answered **ALWAYS** or **SOMETIMES** to the previous question, by which method did you most understand the interpreter? **(Check one only)**

Sign Language _____ (91) Lipreading _____ (92)

Cued Speech _____ (93)

>>>> If you answered **SOMETIMES** to item (86), place a checkmark ( ) next to the grade(s) below where you **DID NOT** have a sign language interpreter.

Kindergarten ____(94) 1st Grade ____(95) 2nd Grade ____(96)
3rd Grade ____(97) 4th Grade ____(98) 5th Grade ____(99)
6th Grade ____(100) 7th Grade ____(101) 8th Grade ____(102)
9th Grade ____(103) 10th Grade ____(104) 11th Grade ____(105)
12th Grade ____(106)

IF YOU ARE DEAF/HARD-OF-HEARING, CONTINUE WITH [PART C].

[PART C]

ALL INDIVIDUALS COMPLETE THIS SECTION.

>>>> Did you have a pre-college course that taught "sex education?"

YES _____ (107) NO _____ (108)

>>>> If **YES**, at what grade was this first taught?_____grade (109)

>>>> If you answered **YES** to item (107), do you feel the course was sufficient and answered most of your questions about:
(Please answer YES or NO to all items)

Birth Control	YES _____ (110)	NO _____ (111)
Abortion	YES _____ (112)	NO _____ (113)
Masturbation	YES _____ (114)	NO _____ (115)
Homosexuality	YES _____ (116)	NO _____ (117)
AIDS	YES _____ (118)	NO _____ (119)
Reproduction	YES _____ (120)	NO _____ (121)
Anatomy & Physiology	YES _____ (122)	NO _____ (123)
Sexual Intercourse	YES _____ (124)	NO _____ (125)

>>>> **From whom did you learn most of what you know about sex-related physiology (your body)? [CHECK ONLY ONE]**

Mother _____ (126) Father _____ (127) Brother(s) _____ (128)

Sister(s) _____ (129) Friend(s) _____ (130)

Teacher(s) _____ (131) _____ _____ (132)
Other (Specify)

>>>> Did your parents discuss "The Facts of Life" with you?
(Check only one)

YES, in depth _____ (133) YES, a little _____ (134)

NO, not at all _____ (135)

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>>>> If you answered **YES** to item (133) or (134), which of your parents discussed "The Facts of Life" **most** with you?

Mother _____ (136) Father _____ (137)

>>>> Have you had sex with another person to the point of orgasm/ejaculation (i.e. "Gone all the way")?

YES _____ (138) NO _____ (139)

>>>> If yes, at what age did you have your first sexual experience? _____ years old (140)

GO TO (PART D) ON PAGE 6

Section II: Sex Information

[PART D]

Following are a list of statements that are either True or **False**. Please read each statement carefully, then circle the letter "T" if you believe the statement is **True**, or circle the letter "F" if you believe the statement is **False**. Circle **ONLY ONE** letter. Answer **ALL** questions.

(1)	The opening of the vagina is partially covered by a membrane called the hymen.	T	F	(1)
(2)	A torn hymen is proof that a woman is not a virgin.	T	F	(2)
(3)	The time a woman is least likely to become pregnant is around the middle of the menstrual cycle.	T	F	(3)
(4)	A woman's menstrual cycle can be changed by stress, travelling, drugs and illness.	T	F	(4)
(5)	The menstrual cycle is approximately 28 days, but this can vary considerably.	T	F	(5)
(6)	The normal menstrual period lasts about 24 hours.	T	F	(6)
(7)	The female body changes that occur during adolescence are called menopause.	T	F	(7)
(8)	Ovulation and the menstruation are the same thing.	T	F	(8)
(9)	Most women stop menstruating in their late forties to early fifties.	T	F	(9)
(10)	The ovum, before fertilization, is about the size of a silver dollar, while the sperm is the size of a pin head.	T	F	(10)
(11)	Fertilization usually occurs in the ovary.	T	F	(11)
(12)	Sperm cells are made in the penis.	T	F	(12)
(13)	A male's body normally begins to make sperm cells about the age of 6.	T	F	(13)
(14)	The baby grows and develops in the ovary.	T	F	(14)
(15)	The mother's use of alcohol and other drugs during pregnancy can harm the unborn baby.	T	F	(15)
(16)	In our society today the responsibility of birth control is usually shared between the man and the woman.	T	F	(16)

(17) A vasectomy is when the woman has her Fallopian tubes tied.	T	F	(17)
(18) In normal childbirth the head of the baby appears first.	T	F	(18)
(19) Giving birth occurs during the process called labor.	T	F	(19)
(20) Research has proven that females do not masturbate.	T	F	(20)
(21) Frequent masturbation can cause mental illness and permanent physical damage.	T	F	(21)
(22) Circumcision is the removal of the penis.	T	F	(22)
(23) Sodomy is the act of anal intercourse.	T	F	(23)
(24) Only homosexuals have anal intercourse.	T	F	(24)
(25) Most girls become sexually mature before boys.	T	F	(25)
(26) The larger the male's penis the more masculine and sexually aggressive he is.	T	F	(26)
(27) During sexual intercourse most women find bigger penises more stimulating and enjoyable than smaller penises.	T	F	(27)
(28) The erect penis is usually too large for the woman's vagina.	T	F	(28)
(29) Most men are capable of having multiple orgasms over a short period of time.	T	F	(29)
(30) Morning erections in males are usually caused by sexual dreams.	T	F	(30)
(31) Orgasms in homosexual persons are different from orgasms in heterosexuals.	T	F	(31)
(32) Gay males are easy to recognize by their feminine behavior and appearance.	T	F	(32)
(33) Most transvestites are homosexual males.	T	F	(33)
(34) Transsexuals are people who feel they want to be the opposite sex or feel they have the wrong body.	T	F	(34)
(35) Foreplay is having sexual intercourse with four individuals at the same time.	T	F	(35)
(36) Impotence is the inability of the male to achieve and maintain erection for intercourse.	T	F	(36)

(37) A "wet dream" or nocturnal emission is when a male ejaculates while sleeping.	T	F	(37)
(38) "Wet dreams" occur only in males who have dirty dreams.	T	F	(38)
(39) Both males and females have nocturnal orgasms.	T	F	(39)
(40) The hormone progesterone is present in both men and women.	T	F	(40)
(41) The hormone testosterone is produced in the penis.	T	F	(41)
(42) The hormone estrogen is produced in the woman's uterus.	T	F	(42)
(43) AIDS is caused by a virus.	T	F	(43)
(44) AIDS is spread by causal contact like handshaking, food sharing, and hugging.	T	F	(44)
(45) If you test positive for HIV it means you already have AIDS.	T	F	(45)
(46) Only gay males, lesbians, and drug abusers get AIDS.	T	F	(46)
(47) A pregnant woman who is HIV+ can give birth to a baby who is HIV+.	T	F	(47)
(48) In March of 1989 a cure was found for AIDS.	T	F	(48)
(49) In the U.S., more men than women have AIDS.	T	F	(49)
(50) Profoundly deaf men are less likely to get AIDS because the auditory nerve is damaged.	T	F	(50)
(51) Penicillin works as a vaccine to prevent getting AIDS.	T	F	(51)
(52) AIDS can be transmitted through oral sex.	T	F	(52)
(53) To reduce the risk of getting AIDS, condoms are necessary only for anal intercourse.	T	F	(53)
(54) Contraceptive foam, cream or jelly can reduce risk of HIV infection.	T	F	(54)

THIS CONCLUDES [PART D].
PLEASE CONTINUE WITH [PART E] ON THE NEXT PAGE (PAGE 9)

[PART E]

Below is a list of organs/parts of male and female sexual anatomy. To the right are a list of functions of different organs/parts. Write the letter of the function next to the appropriate organ/part.

	ORGAN	FUNCTION
(86) _____	Uterus	A Produce testosterone and sperm
(87) _____	Testicles	B About 1/500 of an inch in length, it fertilizes the egg
(88) _____	Fallopian Tubes	C The tube through which the urine passes
(89) _____	Ovaries	D A space that can contract and expand during childbirth and sexual intercourse
(90) _____	Egg Cell (Ovum)	E A hollow organ (womb) where the fertilized egg cell attaches at the beginning of pregnancy
(91) _____	Vagina	F Contains the testicles, expanding and contracting to maintain a stable temperature in the testicles
(92) _____	Sperm	G It has no surface nerve endings and is the division between the uterus and the vagina
(93) _____	Cervix	H Varies in length, and permits the passage of urine and sperm from the body
(94) _____	Clitoris	I This serves as a place where the sperm fertilizes the egg
(95) _____	Scrotum	J Produce and release eggs as well as produce hormones
(96) _____	Urethra	K This is released during ovulation and may become fertilized
(97) _____	Prostate	L Produces a milky fluid which makes up about 30% of the seminal fluid
(98) _____	Penis	M Only known function is for sexual sensation

PLEASE CONTINUE WITH [PART F] ON THE NEXT PAGE

[PART F]

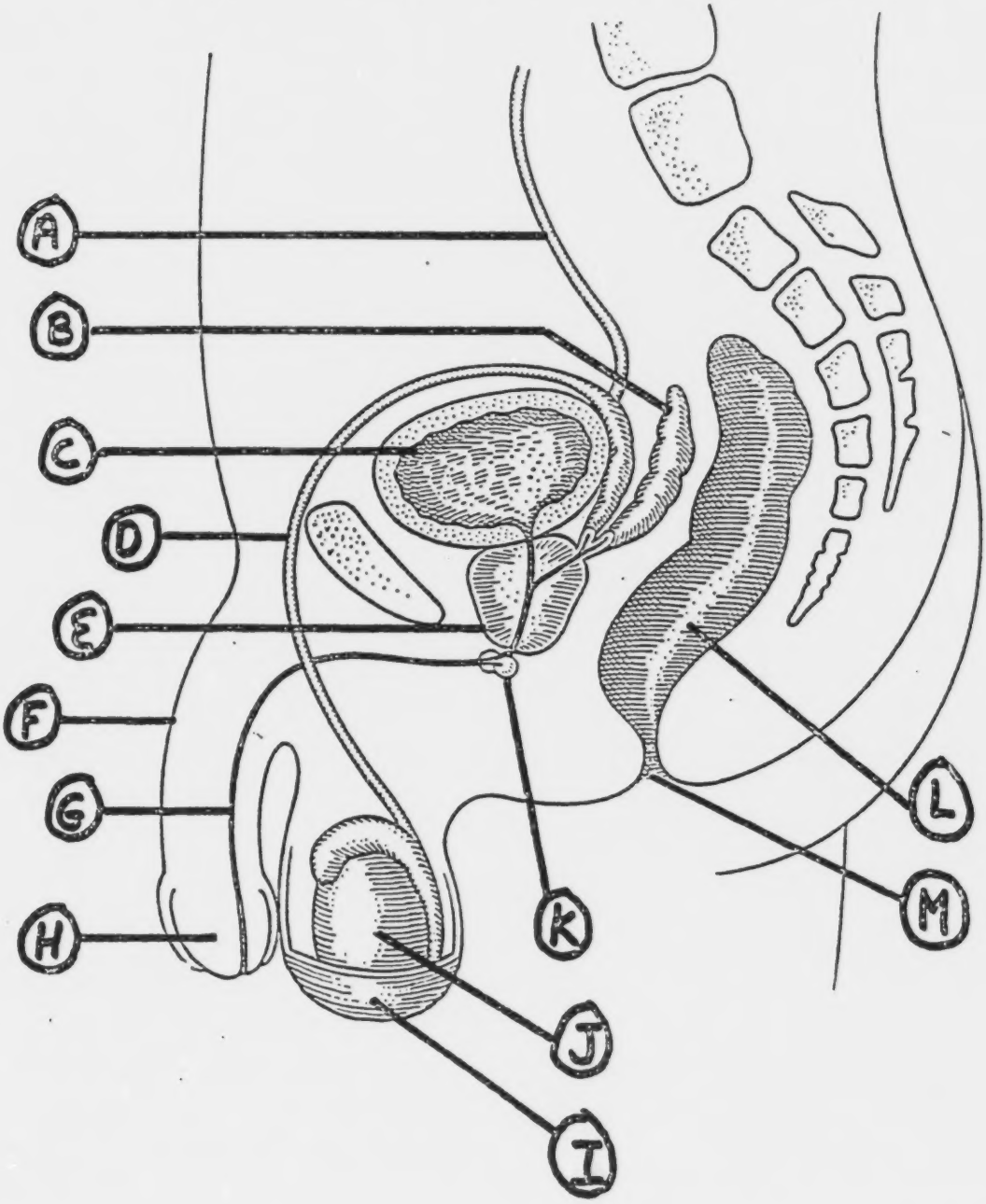
Please refer to the diagrams, (2 separate pages attached to this form) for this part of the questionnaire. On these diagrams organs/parts are labeled by letter only, and these same letters appear in the left column below. Please write the number for the name of the organ/part below next to the corresponding letter for each item. (Since there are more numbered items than letter labels, some of the numbered items will not be used. Each numbered item should be used only once.)

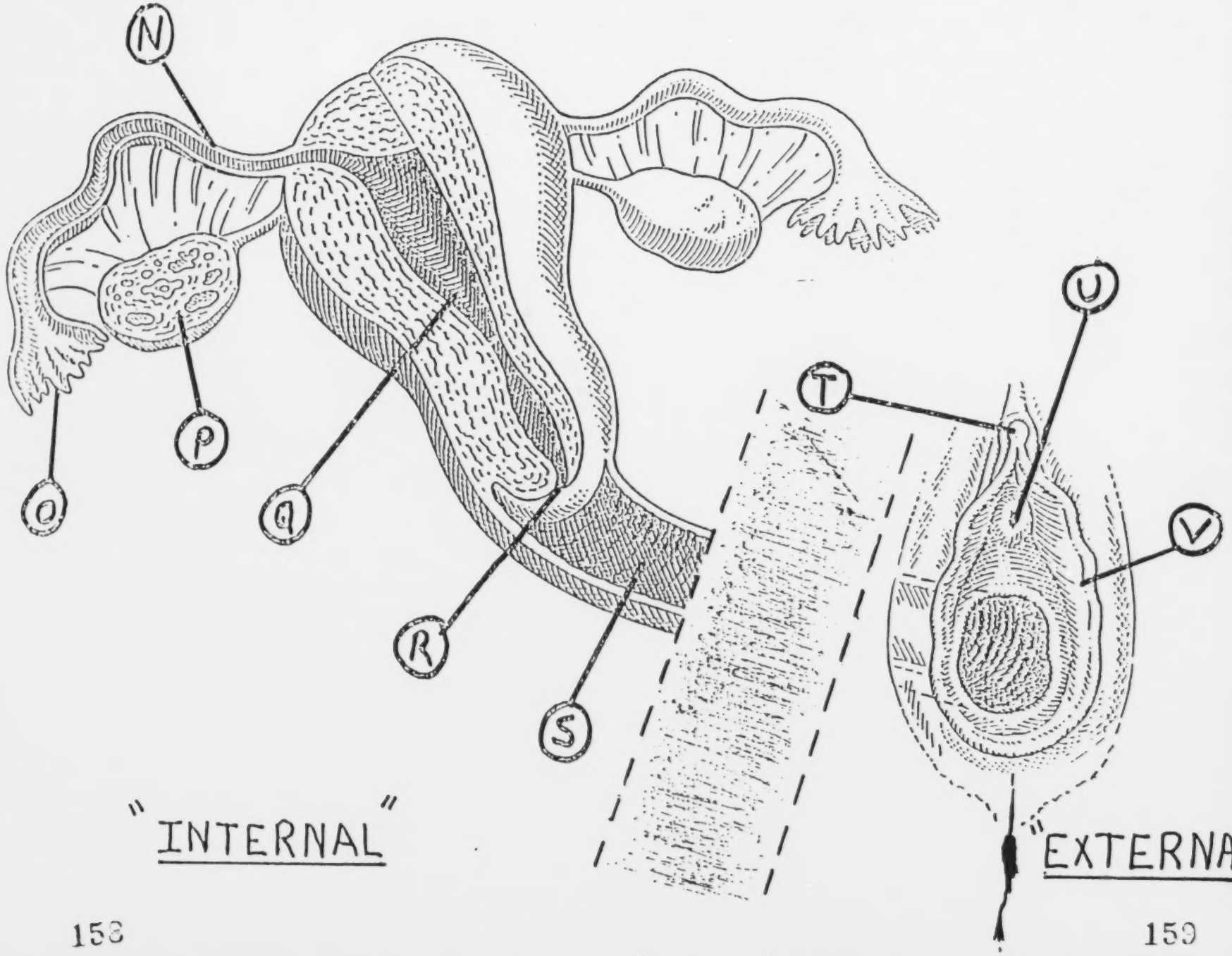
(64) _____	A	1	Vas Deferens	15	Labia
(65) _____	B	2	Vagina	16	Distended Ovum
(66) _____	C	3	Rectum	17	Scrotum
(67) _____	D	4	Spermpods	18	Urinary Opening
(68) _____	E	5	Glans Penis	19	Cervix
(69) _____	F	6	Umbilical Cord	20	Anus
(70) _____	G	7	Uterus	21	Ureter
(71) _____	H	8	Seminal Vesicle	22	Penis
(72) _____	I	9	Embryo	23	Bladder
(73) _____	J	10	Eustachian Tube	24	Prostate
(74) _____	K	11	Bulbourethral Gland	25	I.U.D.
(75) _____	L	12	Clitoral Glans	26	Testis
(76) _____	M	13	Fallopian Tube	27	Fimbria
(77) _____	N	14	Urethra	28	Ovary
(78) _____	O			29	Achilles
(79) _____	P				
(80) _____	Q				
(81) _____	R				
(82) _____	S				
(83) _____	T				
(84) _____	U				
(85) _____	V				

THIS COMPLETES THE SURVEY FORM. THANK YOU FOR YOUR COOPERATION!

PAGE 7A
PAGE 7A

Reproductive System (Side View)




N
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"INTERNAL"
"EXTERNAL"

Section II: Sex Information

[PART D] True/False

(1)	The opening of the vagina is partially covered by a membrane called the hymen.	(T)	F	(1)
(2)	A torn hymen is proof that a woman is not a virgin.	T	(F)	(2)
(3)	The time a woman is <u>least</u> likely to become pregnant is around the middle of the menstrual cycle.	T	(F)	(3)
(4)	A woman's menstrual cycle can be changed by stress, travelling, drugs and illness.	(T)	F	(4)
(5)	The menstrual cycle is approximately 28 days, but this can vary considerably.	(T)	F	(5)
(6)	The normal menstrual period lasts about 24 hours.	T	(F)	(6)
(7)	The female body changes that occur during adolescence are called menopause.	T	(F)	(7)
(8)	Ovulation and the menstruation are the same thing.	T	(F)	(8)
(9)	Most women stop menstruating in their late forties to early fifties.	(T)	F	(9)
(10)	The ovum before fertilization, is about the size of a silver dollar, while the sperm is the size of a pin head.	T	(F)	(10)
(11)	Fertilization usually occurs in the ovary.	T	(F)	(11)
(12)	Sperm cells are made in the penis.	T	(F)	(12)
(13)	A male's body normally begins to make sperm cells about the age of 6.	T	(F)	(13)
(14)	The baby grows and develops in the ovary.	T	(F)	(14)
(15)	The mother's use of alcohol and other drugs during pregnancy can harm the unborn baby.	(T)	F	(15)
(16)	In our society today the responsibility of birth control is usually shared between the man and the woman.	T	(F)	(16)
(17)	A vasectomy is when the woman has her Fallopian tubes tied.	T	(F)	(17)
(18)	In normal childbirth the head of the baby appears first.	(T)	F	(18)
(19)	Giving birth occurs during the process called labor.	(T)	F	(19)
(20)	Research has proven that females do not masturbate.	T	(F)	(20)
(21)	Frequent masturbation can cause mental illness and permanent physical damage.	T	(F)	(21)
(22)	Circumcision is the removal of the penis.	T	(F)	(22)
(23)	Sodomy is the act of anal intercourse.	(T)	F	(23)
(24)	Only homosexuals have anal intercourse.	T	(F)	(24)
(25)	Most girls become sexually mature before boys.	(T)	F	(25)
(26)	The larger the male's penis the more masculine and sexually aggressive he is.	T	(F)	(26)
(27)	During sexual intercourse most women find bigger penises more stimulating and enjoyable than smaller penises.	T	(F)	(27)
(28)	The erect penis is usually too large for the woman's vagina.	T	(F)	(28)
(29)	Most men are capable of having multiple orgasms over a short period of time.	T	(F)	(29)
(30)	Nocturnal erections in males are usually caused by sexual dreams.	T	(F)	(30)
(31)	Orgasms in homosexual persons are different from orgasms in heterosexuals.	T	(F)	(31)
(32)	Gay males are easy to recognize by their feminine behavior and appearance.	T	(F)	(32)
(33)	Most transvestites are homosexual males.	T	(F)	(33)
(34)	Transsexuals are people who feel they want to be the opposite sex or feel they have the wrong body.	(T)	F	(34)
(35)	Foreplay is having sexual intercourse with four individuals at the same time.	T	(F)	(35)
(36)	Impotence is the inability of the male to achieve and maintain erection for intercourse.	(T)	F	(36)
(37)	A "wet dream" or nocturnal emission is when a male ejaculates while sleeping.	(T)	F	(37)
(38)	"Wet dreams" occur only in males who have dirty dreams.	T	(F)	(38)
(39)	Both males and females have nocturnal orgasms.	(T)	F	(39)
(40)	The hormone progesterone is present in both men and women.	(T)	F	(40)
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(42)	The hormone estrogen is produced in the woman's uterus.	T	(F)	(42)
(43)	AIDS is caused by a virus.	(T)	F	(43)
(44)	AIDS is spread by causal contact like handshaking, food sharing, and hugging.	T	(F)	(44)
(45)	If you test positive for HIV it means you already have AIDS.	T	(F)	(45)
(46)	Only gay males, lesbians, and drug abusers get AIDS.	T	(F)	(46)
(47)	A pregnant woman who is HIV+ can give birth to a baby who is HIV+.	(T)	F	(47)
(48)	In March of 1989 a cure was found for AIDS.	T	(F)	(48)
(49)	In the U.S., more men than women have AIDS.	(T)	F	(49)
(50)	Profoundly deaf men are less likely to get AIDS because the auditory nerve is damaged.	T	(F)	(50)
(51)	Penicillin works as a vaccine to prevent getting AIDS.	T	(F)	(51)
(52)	AIDS can be transmitted through oral sex.	(T)	F	(52)
(53)	To reduce the risk of getting AIDS, condoms are necessary only for anal intercourse.	T	(F)	(53)
(54)	Contraceptive foam, cream or jelly can reduce risk of HIV infection.	(T)	F	(54)

BEST COPY AVAILABLE

[PART E]

Below is a list of organs/parts of male and female sexual anatomy. To the right are a list of functions of different organs/parts. Write the letter of the function next to the appropriate organ/part.

	ORGAN	FUNCTION
(86) E	Uterus	A Produce testosterone and sperm
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(92) B	Sperm	G It has no surface nerve endings and is the division between the uterus and the vagina
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(94) M	Clitoris	I This serves as a place where the sperm fertilizes the egg
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(97) L	Prostate	L Produces a milky fluid which makes up about 30% of the seminal fluid
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PLEASE CONTINUE WITH [PART F] ON THE NEXT PAGE

[PART F]

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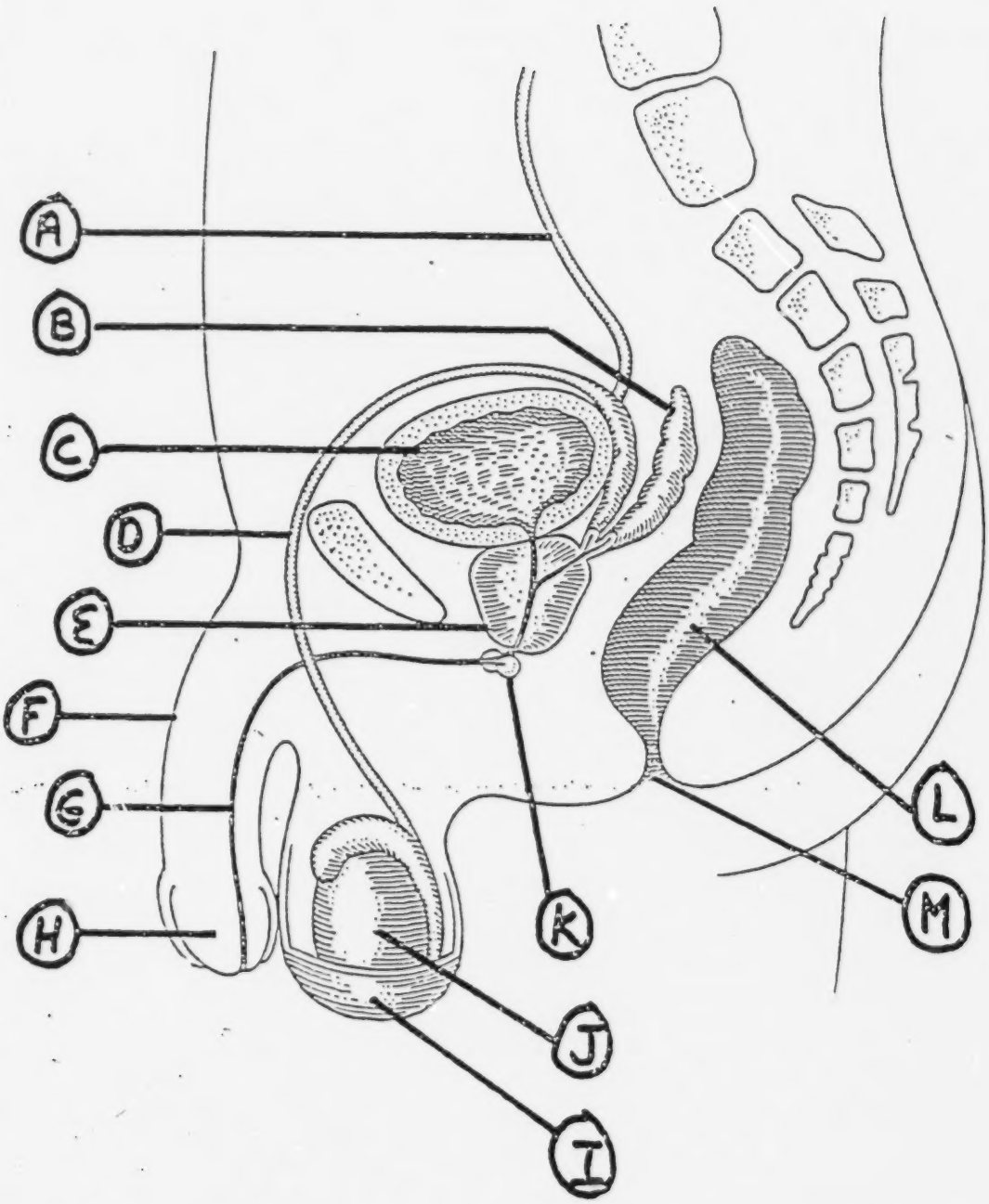
(64)	21	A	1	Vas Deferens	15 Labia
(65)	1	B	2	Vagina	16 Distended Ovum
(66)	3	C	3	Rectum	17 Scrotum
(67)	9	D	4	Spermpods	18 Urinary Opening
(68)	24	E	5	Glans Penis	19 Cervix
(69)	22	F	6	Umbilical Cord	20 Anus
(70)	14	G	7	Uterus	21 Ureter
(71)	5	H	8	Seminal Vesicle	22 Penis
(72)	17	I	9	Embryo	23 Bladder
(73)	26	J	10	Eustachian Tube	24 Prostate
(74)	11	K	11	Bulbourethral Gland	25 I.U.D.
(75)	12	L	12	Clitoral Glans	26 Testis
(76)	20	M	13	Fallopian Tube	27 Fimbria
(77)	13	N	14	Urethra	28 Ovary
(78)	27	O			29 Achilles
(79)	28	P			
(80)	7	Q			
(81)	19	R			
(82)	2	S			
(83)	12	T			
(84)	18	U			
(85)	15	V			

THIS COMPLETES THE SURVEY FORM. THANK YOU FOR YOUR COOPERATION!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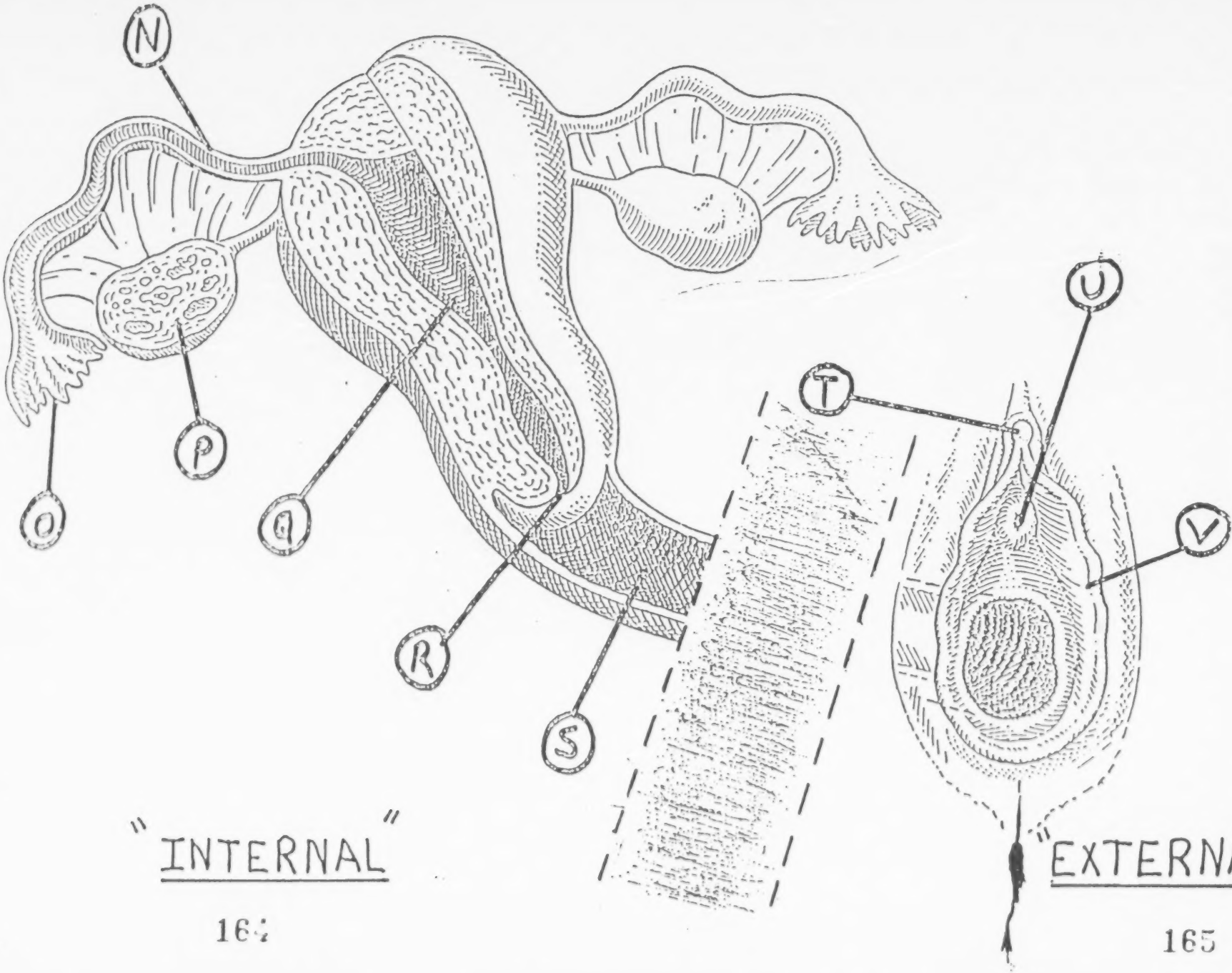

"INTERNAL"

164

"EXTERNAL

165

CENTER FOR THE
STUDY OF
SEX EDUCATION
IN MEDICINE

SEX KNOWLEDGE AND ATTITUDE TEST
(S.K.A.T.)

A TEST ON KNOWLEDGE ABOUT AND ATTITUDES
CONCERNING SEXUAL BEHAVIOR.

Fourteenth Edition
(Revised 1990)

Division of Family Study
Department of Psychiatry
University of Pennsylvania
School of Medicine
4025 Chestnut Street
Philadelphia, Pennsylvania
19104

HAROLD I. LIEF, M.D. *DAVID M. REED, Ph. D.*

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SKAT KNOWLEDGE SECTION (Revision #14)

TRUE/FALSE QUESTIONS

DIRECTIONS: Below you will find a series of statements about sex. If you think the statement is TRUE, then circle the 'T'. If you think it is FALSE, then circle the 'F'. If there is any question you DO NOT understand, then circle the '?'.

1.	Feeling nervous can cause a man to have a quick orgasm and can cause a woman to have difficulty having an orgasm.	T	F	?
2.	A woman can only have an orgasm if her clitoris is touched.	T	F	?
3.	Teenagers are the only people who masturbate.	T	F	?
4.	A man may have trouble getting an erection when he feels nervous or scared.	T	F	?
5.	Male teenagers are more sexually active than female teenagers.	T	F	?
6.	It is rare for a teenage boy to have a sexual encounter with another boy.	T	F	?
7.	A woman who has not had an orgasm is frigid.	T	F	?
8.	A person who exposes himself or makes obscene phone calls will one day become a rapist.	T	F	?
9.	A person who masturbates is having sexual problems with his/her sexual partner.	T	F	?
10.	Many people dream at night about having sex with someone of the same sex.	T	F	?
11.	A person cannot like having sex with both men and women.	T	F	?
12.	Most parents want schools to offer classes in sex education.	T	F	?
13.	Men rape women because they want to control or humiliate them.	T	F	?
14.	During sex, using a condom (rubber) is the best way of avoiding S.T.D.'s (sexually transmitted diseases).	T	F	?

15.	Dreaming about being raped means you want to be raped.	T	F	?
16.	Masturbating causes mental problems.	T	F	?
17.	A woman can't become pregnant during the months that she breast feeds her baby.	T	F	?
18.	The rhythm method (only having sex during the few days before and after a woman's period) is as safe as the pill in preventing pregnancy.	T	F	?
19.	Anyone who is sexually active can get a S.T.D. (sexually transmitted disease).	T	F	?
20.	When a child is raped or molested it is usually done by a stranger.	T	F	?
21.	It is common for both men and women to masturbate.	T	F	?
22.	Taking cocaine increases a person's <u>ability</u> to have sex.	T	F	?
23.	Intercourse produces a stronger orgasm for women than does masturbation.	T	F	?
24.	Douching a few minutes after sex is likely to prevent pregnancy.	T	F	?
25.	A woman is not able to have as strong an orgasm as a man.	T	F	?
26.	More than half of all teenagers in America lose their virginity by age 15.	T	F	?
27.	The youngest age at which <u>most</u> teenage girls can get pregnant is 12.	T	F	?
28.	A woman can <u>ONLY</u> get pregnant if she has an orgasm during sex.	T	F	?
29.	After having one orgasm, most women have to wait 10-20 minutes until they can have another orgasm.	T	F	?
30.	You can get a sexually transmitted disease if you kiss a person who has a sexually transmitted disease.	T	F	?

31.	Rubbers/condoms is the form of birth control MOST WIDELY USED by teenagers who are sexually active.	T	F	?
32.	When teenagers have sex (intercourse) FOR THE FIRST TIME, the majority of them use rubbers (condoms).	T	F	?
33.	Six out of ten teenage girls have sexual activity with another girl.	T	F	?
34.	The safest time to have an abortion is anytime up until the baby is born.	T	F	?
35.	Men who expose themselves in public are called exhibitionists.	T	F	?
36.	Men in their 30s have less interest in having sex compared to their interest when they were teenagers.	T	F	?
37.	A man who wears women's clothes is called a homosexual.	T	F	?
38.	The majority of girls who drop out of high schoold, drop out because they are pregnant.	T	F	?
39.	Most teenage girls who become pregnant will have an abortion.	T	F	?

SKAT KNOWLEDGE SECTION (Revision #14)

TRUE/FALSE QUESTIONS

DIRECTIONS: Below you will find a series of statements about sex. If you think the statement is TRUE, then circle the 'T'. If you think it is FALSE, then circle the 'F'. If there is any question you DO NOT understand, then circle the '?'.

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2.	A woman can only have an orgasm if her clitoris is touched.	T	**F**	?
3.	Teenagers are the only people who masturbate.	T	**F**	?
4.	A man may have trouble getting an erection when he feels nervous or scared.	**T**	F	?
5.	Male teenagers are more sexually active than female teenagers.	**T**	F	?
6.	It is rare for a <u>teenage boy</u> to have a sexual encounter with another boy.	T	**F**	?
7.	A woman who has not had an orgasm is frigid.	T	**F**	?
8.	A person who exposes himself or makes obscene phone calls will one day become a rapist.	T	**F**	?
9.	A person who masturbates is having sexual problems with his/her sexual partner.	T	**F**	?
10.	Many people dream at night about having sex with someone of the same sex.	**T**	F	?
11.	A person cannot like having sex with both men and women.	T	**F**	?
12.	Most parents want schools to offer classes in sex education.	**T**	F	?
13.	Men rape women because they want to control or humiliate them.	**T**	F	?
14.	During sex, using a condom (rubber) is the best way of avoiding S.T.D.'s (sexually transmitted diseases).	**T**	F	?

15. Dreaming about being raped means you want to be raped. T (F) ?

16. Masturbating causes mental problems. T (F) ?

17. A woman can't become pregnant during the months that she breast feeds her baby. T (F) ?

18. The rhythm method (only having sex during the few days before and after a woman's period) is as safe as the pill in preventing pregnancy. T (F) ?

19. Anyone who is sexually active can get a S.T.D. (sexually transmitted disease). (T) F ?

20. When a child is raped or molested it is usually done by a stranger. T (F) ?

21. It is common for both men and women to masturbate. (T) F ?

22. Taking cocaine increases a person's <u>ability</u> to have sex. T (F) ?

23. Intercourse produces a stronger orgasm for women than does masturbation. T (F) ?

24. Douching a few minutes after sex is likely to prevent pregnancy. T (F) ?

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30. You can get a sexually transmitted disease if you kiss a person who has a sexually transmitted disease. (T) F ?

31. Rubbers/condoms is the form of birth control MOST WIDELY USED by teenagers who are sexually active. T (F) ?

32. When teenagers have sex (intercourse) FOR THE FIRST TIME, the majority of them use rubbers (condoms). T (F) ?

33. Six out of ten teenage girls have sexual activity with another girl. T (F) ?

34. The safest time to have an abortion is anytime up until the baby is born. T (F) ?

35. Men who expose themselves in public are called exhibitionists. (T) F ?

36. Men in their 30s have less interest in having sex compared to their interest when they were teenagers. (T) F ?

37. A man who wears women's clothes is called a homosexual. T (F) ?

38. The majority of girls who drop out of high school, drop out because they are pregnant. T (F) ?

39. Most teenage girls who become pregnant will have an abortion. T (F) ?

APPENDIX C

Informed Consent

CONSENT FORM

Title of Study: Sex Knowledge

Investigator: Daniel B. Swartz

Telephone: (301) 880-6935 (V/TTY)

INTRODUCTION:

You are being asked to participate in a study of knowledge of sex-related information. This will be done by having you complete survey forms which are intended to establish your personal background and evaluate your knowledge of sex information. Participation in this research is not designed to be of direct benefit to you personally, but to give us a better understanding of differences in knowledge of sex information between various population groups. This research is being conducted through the Psychology Department of Loyola College in Maryland, Baltimore, Maryland, in conjunction with my Master's Thesis.

PROCEDURE:

You will be asked to complete two survey forms consisting of two parts: a personal inventory section that will ask you to give background information about yourself; and a sex information section which will examine your knowledge of anatomy, reproduction, and other facets related to sex education.

There is no time limit on how long you have to complete the forms. We would appreciate it if you would not leave the room until you have finished the forms. These survey forms require that you be open and honest about your background information, and that you make every attempt to give what you believe are the correct answers in the other sections. Intentionally giving wrong answers will destroy the validity of this study.

BENEFITS:

You should understand that although your participation in this study may not benefit you personally, you are making a contribution to a better scientific understanding of this important subject. In turn, professionals in health-related fields should be better able to serve and educate the hearing-impaired/deaf population at large.

QUESTIONS:

You may ask questions of the investigator and his assistants about the procedures used in this study. We will answer your questions until you believe that you fully understand the procedures of this study. If you have medically related questions you can obtain further information from your Student Health Service on campus.

ANONYMITY:

Because you will not be furnishing your name on any of the papers included in these survey forms, you are guaranteed that your information will remain anonymous. It is important that you understand that you will not be identified by your responses made on these forms.

PARTICIPATION:

Your participation will be for one session in which you will complete the survey forms.

CONSENT WITHDRAWAL:

You are free to withdraw your consent and to stop participation in this study at any time without prejudice towards you. In the event that you have questions about research subjects' rights, you may contact the investigator, Daniel B. Swartz, (301) 880-6935 & (301) 498-1588, both VOICE and TTY. You may also contact Daniel B. Swartz at the Psychology Department, (301) 323-1010 (Voice Only), Loyola College in Maryland, 4501 North Charles Street, Baltimore, Maryland 21210, Lynn Johnson at Towson State University's Institutional Review Board, (301) 830-2236, Towson State University, Towson, Maryland 21204, or Bill Billiter at the Loyola College Human Subjects Review Committee, (301) 323-1010 (Voice Only), Loyola College in Maryland, 4501 North Charles Street, Baltimore, Maryland 21210, or Dr. Kathleen Arnos at Gallaudet University Institutional Review Board, (202) 651-4828 (V/TTY), Gallaudet University, 800 Florida Avenue N. E., Washington, D.C. 20002..

PARTICIPANT STATEMENT AND SIGNATURE

I have read this consent form and have been given the opportunity to ask questions and have them satisfactorily answered. I understand that my participation in this study is entirely voluntary and that I can withdraw from the study at any time.

Signature of Participant Loyola College in Maryland	Signature of Investigator Loyola College in Maryland
Date	Date

CONSENT FORM

Title of Study: Sex Knowledge

Investigator: Daniel B. Swartz

Telephone: (301) 880-6935 (V/TTY)

INTRODUCTION:

You are being asked to participate in a study of knowledge of sex-related information. This will be done by having you complete survey forms which are intended to establish your personal background and evaluate your knowledge of sex information. Participation in this research is not designed to be of direct benefit to you personally, but to give us a better understanding of differences in knowledge of sex information between various population groups. This research is being conducted through the Psychology Department of Loyola College in Maryland, Baltimore, Maryland, in conjunction with my Master's Thesis.

PROCEDURE:

You will be asked to complete two survey forms consisting of two parts: a personal inventory section that will ask you to give background information about yourself; and a sex information section which will examine your knowledge of anatomy, reproduction, and other facets related to sex education.

There is no time limit on how long you have to complete the forms. We would appreciate it if you would not leave the room until you have finished the forms. These survey forms require that you be open and honest about your background information, and that you make every attempt to give what you believe are the correct answers in the other sections. Intentionally giving wrong answers will destroy the validity of this study.

BENEFITS:

You should understand that although your participation in this study may not benefit you personally, you are making a contribution to a better scientific understanding of this important subject. In turn, professionals in health-related fields should be better able to serve and educate the hearing-impaired/deaf population at large.

QUESTIONS:

You may ask questions of the investigator and his assistants about the procedures used in this study. We will answer your questions until you believe that you fully understand the procedures of this study. If you have medically related questions you can obtain further information from your Student Health Service on campus.

ANONYMITY:

Because you will not be furnishing your name on any of the papers included in these survey forms, you are guaranteed that your information will remain anonymous. It is important that you understand that you will not be identified by your responses made on these forms.

PARTICIPATION:

Your participation will be for one session in which you will complete the survey forms.

CONSENT WITHDRAWAL:

You are free to withdraw your consent and to stop participation in this study at any time without prejudice towards you. In the event that you have questions about research subjects' rights, you may contact the investigator, Daniel B. Swartz, (301) 880-6935 & (301) 498-1588, both VOICE and TTY. You may also contact Daniel B. Swartz at the Psychology Department, (301) 323-1010 (Voice Only), Loyola College in Maryland, 4501 North Charles Street, Baltimore, Maryland 21210, Lynn Johnson at Towson State University's Institutional Review Board, (301) 830-2236, Towson State University, Towson, Maryland 21204, or Bill Billiter at the Loyola College Human Subjects Review Committee, (301) 323-1010 (Voice Only), Loyola College in Maryland, 4501 North Charles Street, Baltimore, Maryland 21210, or Dr. Kathleen Arnos at Gallaudet University Institutional Review Board, (202) 651-4828 (V/TTY), Gallaudet University, 800 Florida Avenue N. E., Washington, D.C. 20002.

PARTICIPANT STATEMENT AND SIGNATURE

I have read this consent form and have been given the opportunity to ask questions and have them satisfactorily answered. I understand that my participation in this study is entirely voluntary and that I can withdraw from the study at any time.

_____	_____
Signature of Participant Towson State University	Signature of Investigator Loyola College in Maryland
_____	_____
Date	Date

CONSENT FORM

Title of Study: Sex Knowledge

Investigator: Daniel B. Swartz

Telephone: (301) 880-6935 (V/TTY) or (301) 498-1588 (V/TTY)

INTRODUCTION:

You are being asked to participate in a study of knowledge of sex-related information. This will be done by having you complete a survey form which is intended to establish your personal background and evaluate your knowledge of sex information. Participation in this research is not designed to be of direct benefit to you personally, but to give us a better understanding of differences in knowledge of sex information between various population groups. This research is being conducted through the Psychology Department of Loyola College in Maryland, Baltimore, Maryland.

PROCEDURE:

You will be asked to complete a survey form consisting of two parts: a personal inventory section that will ask you to give background information about yourself; and a sex information section which will examine your knowledge of anatomy, reproduction, and other facets related to sex education.

There is no time limit on how long you have to complete the form. We would appreciate it if you would not leave the room until you have finished the forms. This survey form requires that you be open and honest about your background information, and that you make every attempt to give what you believe are the correct answers in the other sections. Intentionally giving wrong answers will destroy the validity of this study.

BENEFITS:

You should understand that although your participation in this study may not benefit you personally, you are making a contribution to a better scientific understanding of this important subject. In turn, professionals in health-related fields should be better able to serve and educate the hearing-impaired/deaf population at large.

QUESTIONS:

You may ask questions of the investigator and his assistants about the procedures used in this study. We will answer your questions until you believe that you fully understand the procedures of this study. If you have medically related questions you can obtain further information from your Student Health Service on campus.

ANONYMITY:

Because you will not be furnishing your name on any of the papers included in this survey form, you are guaranteed that your information will remain anonymous. It is important that you understand that you will not be identified by your responses made on the form.

PARTICIPATION:

Your participation will be for one session in which you will complete the survey form.

CONSENT WITHDRAWAL:

You are free to withdraw your consent and to stop participation in this study at any time without prejudice towards you. In the event that you have questions about research subjects' rights, you may contact the investigator, Daniel B. Swartz, (301) 880-6935 & (301) 498-1588, both VOICE and TTY. You may also contact Daniel B. Swartz at the Psychology Department, (301) 323-1010 (VOICE Only), Loyola College in Maryland, 4501 North Charles Street, Baltimore, Maryland 21210, Bill Billiter at the Loyola College Human Subjects Review Committee, (301) 323-1010 (VOICE Only), Loyola College in Maryland, 4501 North Charles Street, Baltimore, Maryland 21210, Dr. Kathleen Arnos at Gallaudet University Institutional Review Board, (202) 651-4828 (V/TTY), Gallaudet University, 800 Florida Avenue N. E., Washington, D.C. 20002, or Lynn Johnson at Towson State University's Institutional Review Board, (301) 830-2236 (VOICE Only), Towson State University, Towson, Maryland 21204.

PARTICIPANT STATEMENT AND SIGNATURE

I have read this consent form and have been given the opportunity to ask questions and have them satisfactorily answered. I understand that my participation in this study is entirely voluntary and that I can withdraw from the study at any time.

Signature of Participant Gallaudet University	Signature of Investigator Loyola College in Maryland
Date	Date

APPENDIX D

Inventory Instructions

Dear Research Participant:

This research is being conducted in conjunction with my Master's thesis study in human sexuality at Loyola College's Department of Psychology. This form has received approval from your college's Human Subjects Review Committee (HSRC) or Institutional Review Board (IRB), which means that it meets all criteria for administration to students at your college. The HSRC's and IRB's approval guarantees you certain protections as a participant in research.

Participation in this research is strictly on a voluntary basis. You should understand that although your participation in this study may not benefit you personally, you are making a contribution to a better scientific understanding of this important subject.

Before you begin these forms I want to stress that you **will not** be asked to give your name, so you should have complete confidence that **your information will remain anonymous**. It is important that you understand that you will not be identified by your responses made on these forms.

There will be explicit questions regarding human anatomy and sexual/reproductive processes. It is critical that you answer all background information in the forms as truthfully and accurately as possible. Any background information that is inaccurate will have a negative effect on the validity of the results.

When answering the true/false, multiple choice, matching, and labelling portions of the forms, it is important that you make every effort to do your best. You do not have to answer all questions, but not doing so will have a negative effect on the validity of the results.

Finally, **if for any reason whatsoever** you do not understand a question in the forms, please go to where the examiner is sitting and ask for clarification.

Sincerely,

Daniel B. Swartz
Investigator

GENERAL INSTRUCTIONS

1. Make sure you have a pencil or pen. A pencil may be better because you may need to erase some answers. **This is all you will need.**

2. Place backpacks, books, etc., under the table or your chair.

3. There shall be no "talking" or chatting with other students in this room. Those who chat will be asked to leave.

4. If you have any questions at all while you are in this room, ask the examiner at his table. **Do not raise your hand.**

5. Please read the **Consent Form** very carefully, sign it, and date it.

6. When you have finished reading these instructions please hand your signed **Consent Form** to the examiner.

7. You will then be given the **Sex Knowledge Inventory (SKI) and the Sex Knowledge & Attitudes Test (SKAT).** The SKI has two diagrams attached to it. Feel free to take off the paper clip and separate the diagrams - it may make it easier for you to answer the questions.

8. Remember that you have the right to stop participation in this study at any time.

9. Do your best. You are making an important contribution to science.

10. When you have completed the **SKI and SKAT Forms**, please leave your seat and place them at the end of the examiner's table. Make sure both the **SKI and SKAT** are paper-clipped together. **Do not directly hand your forms to the examiner.** This is to protect and maintain your anonymity.

11. If you have a vision problem please inform the examiner before you receive the **SKI and SKAT.** The examiner will give you a larger print version.

APPENDIX E

Debriefing

LOYOLA COLLEGE IN MARYLAND

MEMORANDUM

TO: Sex Knowledge Research Participants

FROM: Daniel B. Swartz, Principal Investigator

RE: Debriefing

Thank you for your participation in this study. This research, "A Comparative Study of Sex Knowledge Among Hearing and Deaf College Freshmen," is being conducted at Gallaudet University, Loyola College, and Towson State University.

You were asked to complete two sex knowledge inventories, one by Lief (1972, 1990), the SKAT, and one by Swartz (1990, 1991), the SKI. At this debriefing the correct answers to the knowledge portions of the SKI and SKAT will be handed out, and any questions you have will be answered.

One hypothesis is that the SKI is a more thorough instrument for determining sex knowledge among both hearing and deaf students. Also hypothesized is that hearing students will demonstrate more sex knowledge than deaf students. The last hypothesis is based on previous research by Grossman (1972) and Swartz (1990), where deaf students lagged behind hearing students in sex knowledge. **The reasons for this are many, none of which imply that hearing students are smarter than deaf students.**

Swartz (1990, 1991) developed the SKI as an instrument designed to assess knowledge while maintaining a degree of readability suitable for deaf students at Gallaudet, something that has been brought into question concerning Lief & Reed's (1972) SKAT (Achtzehn, 1981, Swartz, 1990), which is widely used as the standard measure of sex knowledge.

Our society is currently in a period of critical public concern about issues involving sexuality (AIDS epidemic, the world's highest teenage pregnancy rate [Rice, 1987], abortion, etc.) which is made worse by the lack of complete and accurate sex knowledge. In this time of concern, it is crucial that the entire school-age population have timely access to accurate information, and that hearing loss not impede the acquisition of this information.

For a more detailed description of this research, or if you have any further questions, please send inquiries, along with a SASE to: Daniel B. Swartz, P.O. Box 2812, Laurel, MD 20709.

Sincerely,

Daniel B. Swartz
Principal Investigator

4501 North Charles Street
Baltimore, Maryland 21210-2699

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